MODEL AIRPLANE NEWS

12th Year of Publication

APRIL 1941
20c

Douglas 8A-5
Norwegian Attack-Bomber

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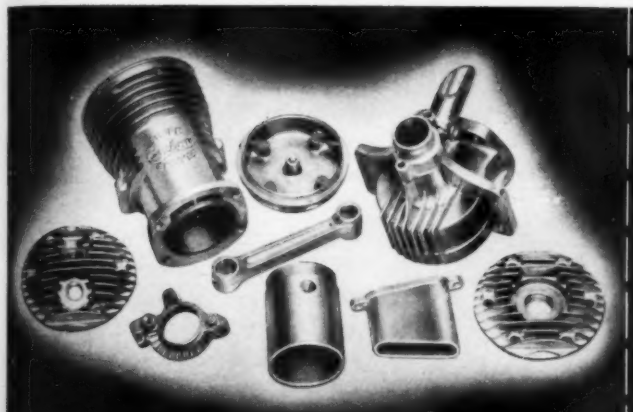

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PROP WASH

THE ROLE PLAYED by model airplanes in the origin and development of aviation has been, and is today, of considerable importance.

SIXTY-FIVE YEARS ago, in 1876, the French scientist Penaud experimented with model gliders and discovered the use of longitudinal dihedral, an arrangement now employed on practically all airplanes. It was this same Penaud who designed and constructed the model helicopter which so intrigued the Wright brothers that their brilliant talents and vivid imaginations were thenceforth devoted to the study of heavier-than-air flight.

PAINSTAKING MODEL RESEARCH was begun by the Wrights, and the accumulated data checked against the German scientist Lilienthal's actual gliding flight calculations. The Americans were surprised to find that the figures did not reconcile. To prove the accuracy of their own results the brothers designed and built a wind tunnel in which they tested more than 200 model airfoil sections.

FROM THESE EXPERIMENTS the Wrights developed the flexible wing surface for lateral control and this device is used today in another form—the aileron . . . The experimental models showed that a rudder produced skidding, which was overcome by providing a vertical keel surface—the fin . . . Also, a horizontal rudder was devised for change of direction in the vertical plane, as well as for longitudinal stability—the stabilizer and elevator.

THE GENIUS OF Wilbur and Orville Wright had conceived from models the elements of control about the three principal axes of the airplane—a seed that germinated into the first airplane flights and grew into the present day robust aviation industry.

THE EVER ALERT United States Navy was quick to appreciate the efficacy of models for research. In 1911 naval aviation began to experiment with floats at the Model Basin in the Washington Navy Yard, and immediate improvement in float form resulted. So successful were the seaplane water tests that it was unanimously agreed to airtest them; and forthwith a wind tunnel was designed and constructed. That same tunnel is in use today, accurately predicting the performance of the new Navy planes. In this work, no small measure of credit is due to the skill of the model builders who produce scale models with remarkable precision and artistry.

ANOTHER IMPORTANT ROLE played by the model is that of salesman. The greatest selling force the aviation industry has ever had are the models flown at contests in every city, town and hamlet in the country. Millions of touring Americans have stopped momentarily out of curiosity at these meets . . . and then stayed, keenly interested. In numberless homes quizzical fathers have watched model builders at work, then with gathering interest and pride have seen unsuspected talents unfold. Senior frankly admits it was Junior who sold him on aviation.

YES, THE MODEL AIRPLANE has been a significant factor in the conquest of the air. It may even be said with considerable assurance that the model airplane is the sire of those huge, sleek, metal birds seen almost anytime, anywhere, winging across the skies.

—THE EDITOR

12TH YEAR OF PUBLICATION

MODEL AIRPLANE NEWS

APRIL 1941 VOL. XXIV, No. 4

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Charles Hampson Grant

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MODEL

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WORLD'S FINEST PROPELLERS

NEW 1941 D-G PROPS

All sizes 8" to 14"

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NEW HIGHER THRUST!
NEW PRECISION ACCURACY!

MODELLERS!

Consult Modelcraft's Official Propeller Specification Chart and Find the Approved and Tested Prop for Your Make and Age of Engine. At Your Dealer's or Write for FREE Copy.

Now you can transform the maximum amount of your motor's power into FORWARD THRUST. Your previous ideas of what a prop will do—and what your present motor will do—are going to be revised upwards when you fit one of these 1941 precision-pitched D-G props to your ship. At your dealer's—or order direct.

NOTE. Though made from finest selected straight grain hardwood, D-G props will BREAK before they bend your crankshaft. This is intentional. (We could make harder props.) But it is cheaper for YOU to buy props than new engine parts—and with a Modelcraft D-G prop your engine will always be available for use.

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A Letter from Captain Ken Woolsey, TWA Pilot, U. S. Marine Corps Reserves

Gentlemen:

Please send two dozen of your 11" D-G Props. When I was assigned to the Coast I always used Modelcraft props in my models, and now that I am back here I haven't been able to find any props with the thrust of yours. Also I don't want to take a chance on busting my motor. Please ship as soon as possible.

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STUKA JU87B — MESSERSCHMITT

SPITFIRE — BOULTON-PAUL

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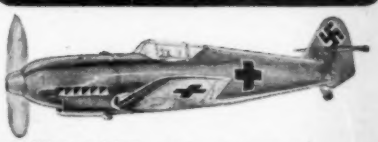

MESSERSCHMITT—30 in. wing spread
SUPERMARINE SPITFIRE—24 in. wing spread
CURTISS P-40—25 in. wing spread
BELL AIRABONITA—24 in. wing spread

Only **25c Each.** 10c postage.

PACIFIC ACE

Over 300,000 sold. Kit is complete. Nothing extra to buy. 10c postage.

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CRAFT

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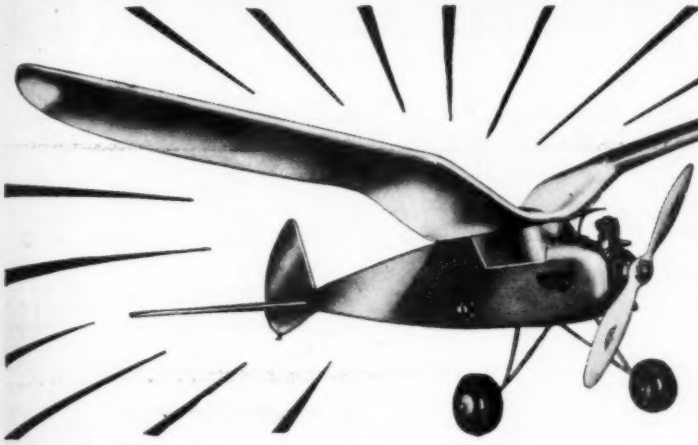
FIRST THE COAST—NOW THE COUNTRY GOES



"SPOOK"

NOT MERELY A NEW CONTEST SHIP, BUT THE FORERUNNER OF A TREND IN GAS MODEL DESIGN

SPOOK 72. CLASS C—*for any Class C engine.* Will definitely handle an Ohlsson 60 at full throttle. Wt. only 3 lbs., yet has strength factor of a 5 lb. airplane. Plans only, **50c.** **$3.95**

In a feature article in AIR TRAILS for Feb., Henry Struck announced a gull-wing ship, the Boomer Bus. Congratulations, Mr. Struck, on your vision and courage. In time everybody will admit what Modelcraft engineers have been saying for SIX MONTHS—that the Gull Wing is one of the basic aircraft designs, if correctly applied.

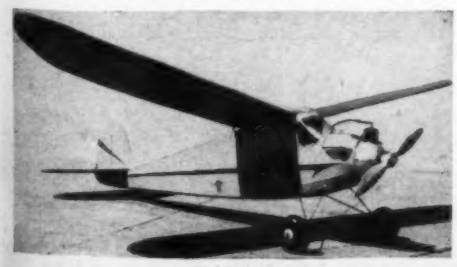
Taking Off In A Blaze Of Speed, The SPOOKS (Big And Little) Come Out In Long, Flat, Graceful Glides And Practically Glue Themselves To Any Thermals That May Be Available.

SPOOK 48. CLASS A or B. Wing loading 8 oz. per sq. ft. Wing span 48". Chord 7". Kit fully complete. Plans only, **25c.** **$1.50**

Modelcraft has been in business too long to try to "kid" modelers. Either a model performs or it doesn't. In the SPOOK we have successfully adapted the Gull Wing principle to model airplanes, resulting in another of the *basic model designs* that you can name on the fingers of one hand. Don't wait until everybody is flying a gull wing. Build a SPOOK now and get some contests under your belt this summer.

★ TWO GREAT AVIATOR'S MODELS ★

MISS TINY CLASS A. To know Tiny is to love her. Not new, not "revolutionary," but a perfect honey in looks, lines—and if you keep up with contest announcements—a consistent Class A winner! Any thermal on earth can have a date with Miss Tiny. She's democratic, but she's exclusive in one thing. She has more unruffled flying poise and grace than any Class A aviator's model on the field. See her at any dealer's and judge for yourself. De Luxe Kit. Also Standard, **$2.95.** Dry, **$1.95.** Plans only, **25c** **$3.95**



SKY BABY CLASS B. If you own an Ohlsson 23, Forster 29, Brownie, or other good engine up to Bunch size, you're practically wasting it if you aren't using Modelcraft's Sky Baby. De Luxe Kit costs only $3.85 and includes Voit air wheels, spun aluminum cowl, mounts for both radial and beam mount motors. Wing span 54". Chord 7". This is another aviator's model you'll want to fly and fly, and the firsts she'll turn in will be just bonuses. Plans only, **25c**

COMPLETE **$3.85**

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North American AT-6A, advanced trainers, wing their way from factory to a rendezvous with America's young "eagles." (Acme)

THOUSANDS OF

PART 2

By DOUGLAS J. INGELLS

NEARLY all the first part of a student's training is groundwork, with very little flying: The ground school training has embodied in his mind all necessary knowledge relative to flying a plane.

Of course, there have been many hours of dual instruction in the air, to illustrate different phases of flight-control to the cadet, but most of his time has been spent on the ground learning fundamentals.

But there is still another element to this training. It is true that he is theoretically a pilot, his training thus far has made him so; but he is not yet a "military pilot," his ultimate goal. To earn this title he must be more than a good aviator, he must be a "killer with guns." It seems wrong to call him that, but we must remember upon his shoulders rests our nation's defense. Any day now he may be called upon to fight some new enemy high above the clouds and without expert training in the use of aerial gunnery he would be practically helpless against his foe. Besides he knew when he accepted his appointment that part of his training would be the art of self-defense. Therefore he does not resent the name "killer" because he is performing his duty in an effort to keep others from the path of death.

The U.S. Army Air Corps today uses several different makes of machine guns. They are all the same general type but each has its

Enlisted men, cadets and officers assembled in front of administration building for presentation exercises

Student, rear pit, receives instruction while flying a Stearman trainer above Randolph Field

Students in new PT-19 trainers at Hicks Field, Texas. (Acme)

Students ready for practice in sky gyrations in BT-9's. (Acme)

This type ship is used for basic training; a BT-9

Advanced students practice with these old bombers

WAR BIRDS

Intimate Glimpses of How Uncle Sam Trains Men for the Most Important Job on Earth— The Aerial Defense of America

own requirements for operation. This necessitates special training for the use of each type. Before he completes training the military pilot must be able to strip and assemble the gun and know the name and function of each part. When this can be accomplished satisfactorily he should have no trouble with his guns, even though he must operate them at the same time he flies his plane. "Jammed guns," the fear of many a war-time pilot, are not likely to befall this present-day skyhawk, since he is better trained in operation and care for his weapons.

Another essential study relative to the new student's training is "Radio Code." Short-wave enthusiasts can hear and understand commercial airline pilots communicating with their ground bases by radio telephone. Only a few, however, are able to determine the messages which fill the air in dot-dash frequency, carrying instructions to the army pilots winging their way over the continent. Because of secrecy necessary to army operations, radio telephone is not used to transmit important messages from

(Continued on page 61)

Students adjust cords in the chute-loft

Advanced students at "Kelly" inspect bomb release mechanism of a new Douglas B-18

Communications Center where operators keep constant contact with planes in the air

Stearman trainers "on the line" at Randolph

Students learn code and word communication signals

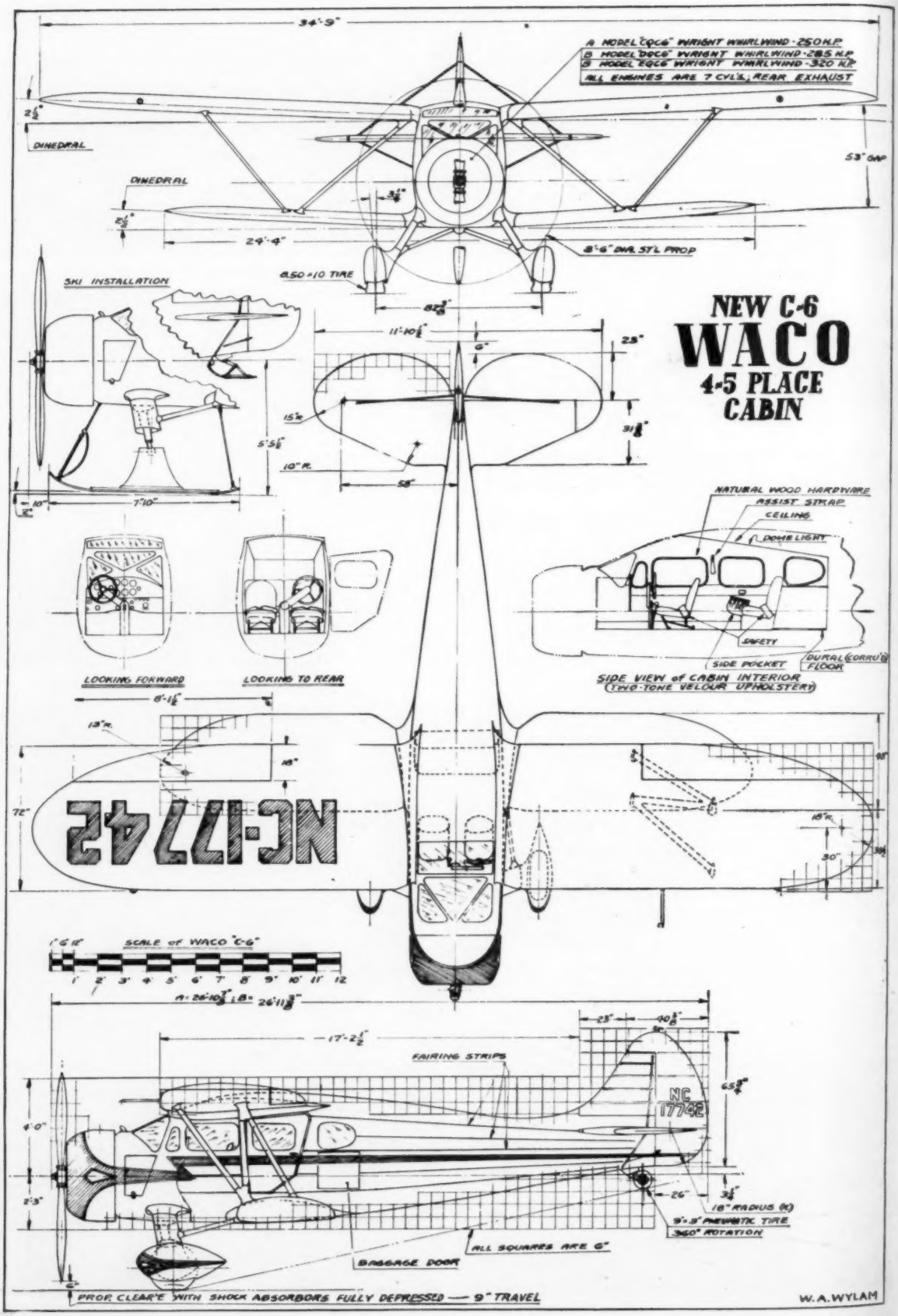
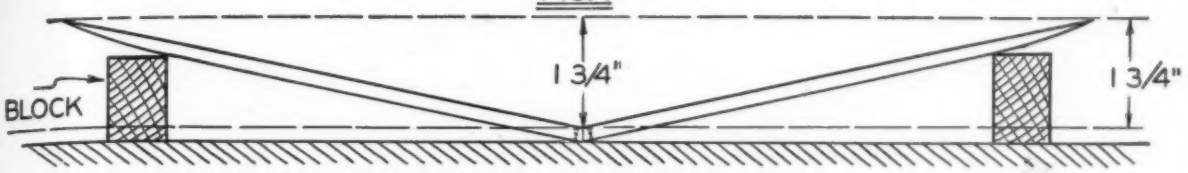

NEW C-6
WACO
4-5 PLACE
CABIN
A MODEL "QC6" WRIGHT WHIRLWIND · 250 H.P.
B MODEL "QC6" WRIGHT WHIRLWIND · 285 H.P.
C MODEL "QC6 WRIGHT WHIRLWIND · 320 H.P.
ALL ENGINES ARE 7 CYL'S, REAR EXHAUST
34'-9"
53" GAP
DIHEDRAL
24'-4"
8'-6" DIA. ST'L PROP
SKI INSTALLATION
8.50-10 TIRE
11'-10½"
7'-10"
LOOKING FORWARD
LOOKING TO REAR
NATURAL WOOD HARDWARE
ASSIST. STRAP
CEILING
DOME LIGHT
SAFETY
SIDE POCKET
DURAL (CORRU'D) FLOOR
SIDE VIEW of CABIN INTERIOR
(TWO-TONE VELOUR UPHOLSTERY)
NC-17742
SCALE of WACO "C-6"
A: 26'-10⅞" B: 26'-11⅜"
17'-2½"
FAIRING STRIPS
NC 17742
18" RADIUS (R)
9"-3" PNEUMATIC TIRE
360° ROTATION
ALL SQUARES ARE 6"
BAGGAGE DOOR
PROP. CLEAR'E WITH SHOCK ABSORBERS FULLY DEPRESSED — 9" TRAVEL
W. A. WYLAM

FIG. 1

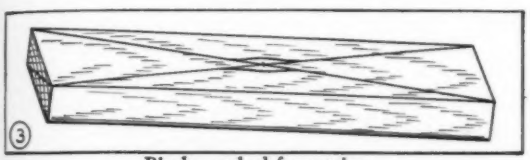


MODEL DESIGNING SIMPLIFIED

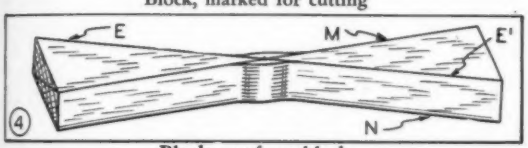
PART 5

By CHARLES HAMPSON GRANT

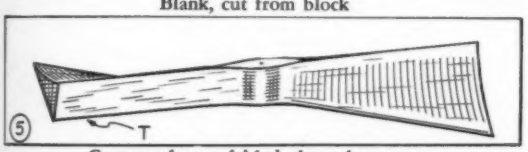
This is the fifth of a series of articles describing a simple procedure for designing and building an all-balsa stick model. Because of the ease of construction and the reliability of flight, it will prove to be an exceptional model for beginners who have never built a power model plane. The four preceding articles have described how to proceed in designing a plane, drawing the plans, making the patterns, and cutting out the various parts.



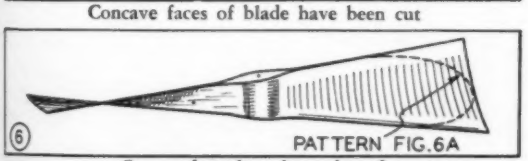
Block, marked for cutting



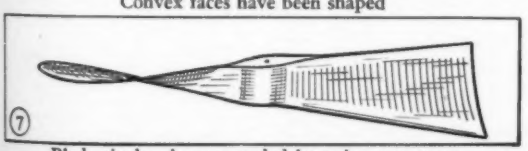
Blank, cut from block



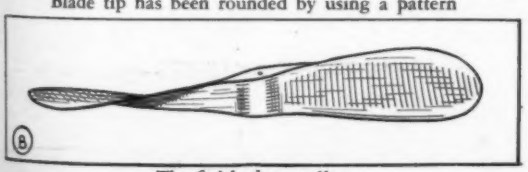
Concave faces of blade have been cut



Convex faces have been shaped



Blade tip has been rounded by using a pattern



The finished propeller

IT IS assumed that the reader has read the articles describing the operations in building the model up to this point. The problem now is to assembly the parts that have been cut out. First the two wing halves (pinions) are to be glued together at their center and at such an angle that the tips are raised 1 3/4" above a horizontal line passing through the center point of the wing, shown in Figure 1. To do this proceed as follows: First note Figure 2. You will observe that the inside ends of each pinion have been cut at right angles to the wing surface; ribs shown at R have been glued to the under surfaces of the balsa sheet forming the wing pinions. These pinions now are to be cemented together. However, in order to form the correct dihedral angle the two edges of the pinions at the wing center will have to be beveled by sanding away part of the ends so that when the two halves are fitted together a correct dihedral will result. The part of the pinion which is to be taken off is shown by the shaded portion in Figure 2. The ends should be sanded down to the dotted line L. These two surfaces butting together should be absolutely flat so that the ends of the pinions fit tightly together. Sand a little off each pinion at a time, occasionally fitting the ends together to see if the angles are right and the joint tight when the wing tips are elevated the correct amount.

Before cementing them together, two extra ribs 1/16" wide (shown at Q in Figure 2) must be cemented to the outer sides of the center ribs. This is to give added strength after the butt ends of each pinion have been beveled. The ribs should be of the same cross section as the ones already cemented in place and held tightly to the center rib R with pins until the cement is thoroughly dry. While they are drying, however, the wing may be joined at the center; the beveled sides of the pinions being covered with cement and pressed tightly together. While the cement of the joint is hardening, keep the wing tips raised so that the correct dihedral will be formed. The tips may be propped up with books or blocks, whichever may be most convenient, as shown in Figure 1. The wing should not be disturbed for at least one-half hour. Excess cement squeezed out of the joint should be smoothed down with the finger. A piece of paper placed under the joint before the ends are pressed together will prevent cement from adhering to the bench.

(Continued on page 67)

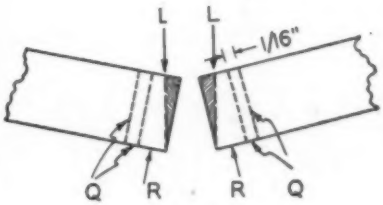


FIG. 2

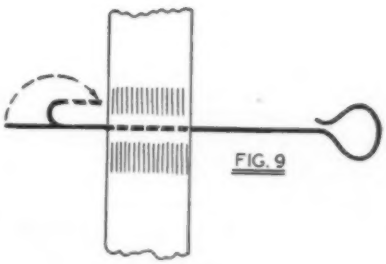


FIG. 9

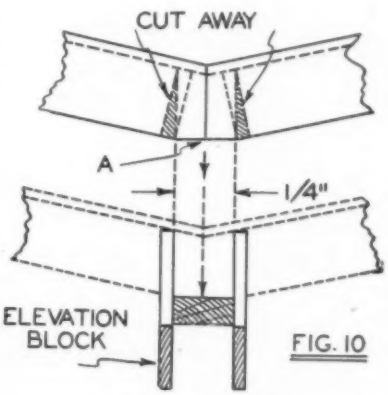


FIG. 10

The Dolphin in which the control system was installed

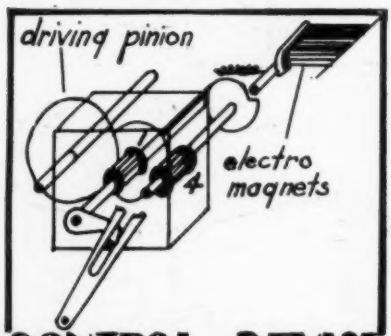
A rear view showing the radio-controlled rudder

A RADIO CONTROL FOR GAS JOBS

A System Providing Individual Control of an Infinite Number of Control Units Through One Receiver and Transmitter

By THRACY PETRIDES and LEON HILLMAN

IT WORKED perfectly on the ground, but would it work in the air? The tank was loaded with gas and the booster batteries plugged in. The prop was turned over once, twice—then she caught. On the control panel a small switch was thrown, the motor which had just been running in medium spark position idled, simultaneously a small colored bulb lit on the panel board indicating to the operator that the condition was such. Then, a shout was given! A flash of lights on the control panel showed a change of controls, the needle of the meter jumped in accordance with the transmitted impulses—action! The Dolfin taxied with neutral rudder to the center of the runway, with its nose pointed in the wind, the engine could be heard releasing its power; with a steady run the plane took off and quickly gained altitude and once sufficiently high responded admirably to every impulse transmitted by its "landlubber" pilots.



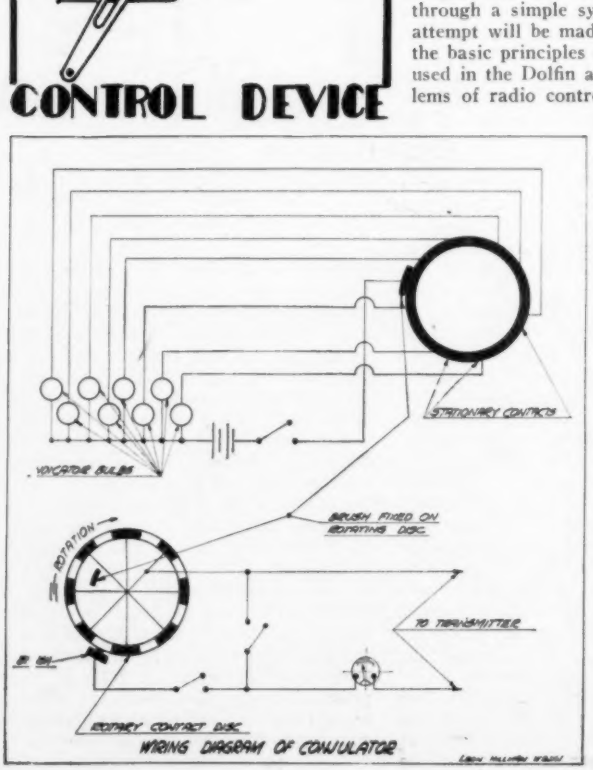
This scientific feat was accomplished through a simple system of control. An attempt will be made to show the reader the basic principles of the control system used in the Dolfin and some of the problems of radio control that were encountered and solved.

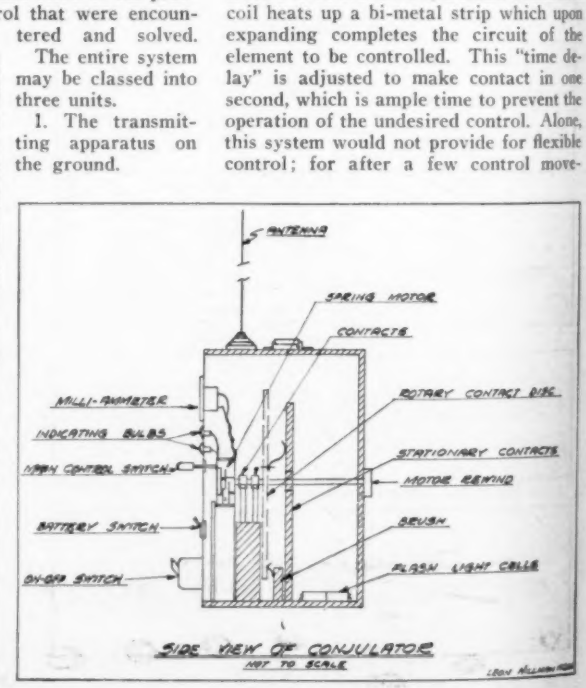
The entire system may be classed into three units.

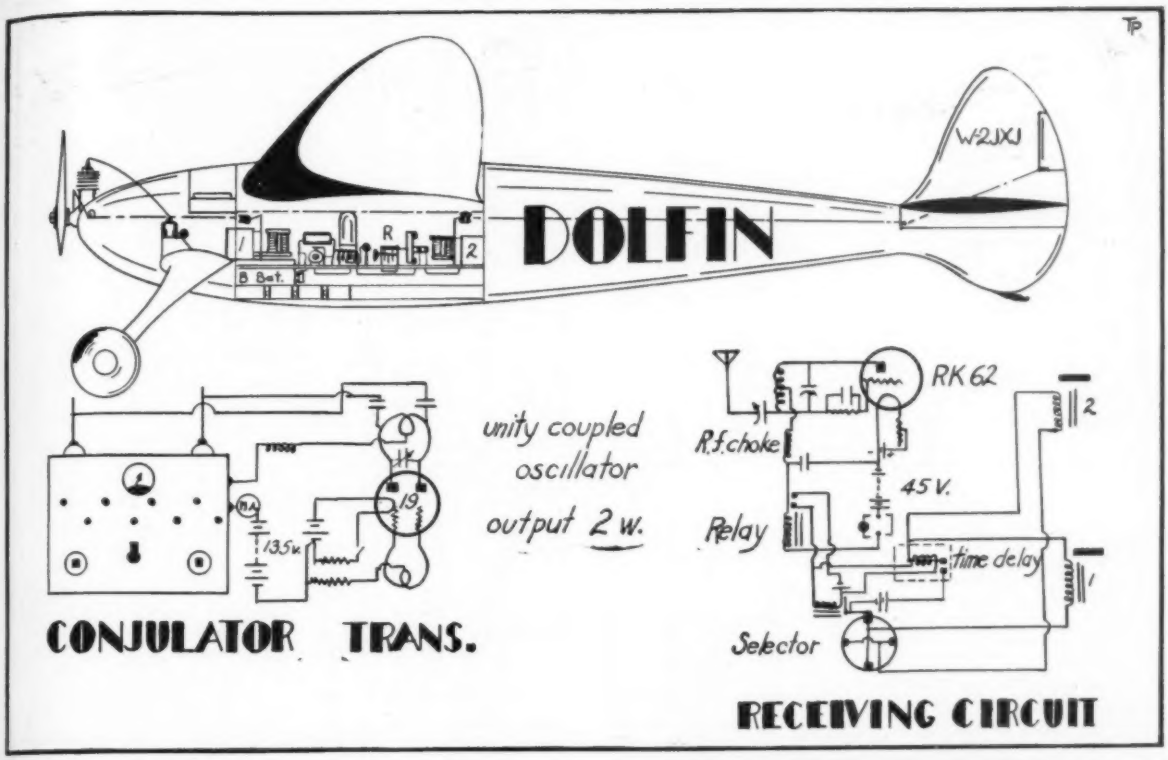
1. The transmitting apparatus on the ground.
2. The receiver in the plane.
3. The mechanisms used in controlling the motor and rudder.

To obtain more than one control element with one receiver and one transmitter a special system had to be devised as shown in the accompanying diagrams. Its operation is as follows: Transmitting an impulse from the ground closes the sensitive relay in the receiver. This relay is connected to a *selecting receptor* which operates on the ratchet principle. This selector is constructed so that alternately it will complete the motor and tail circuits.

When the desired element to be controlled is in the circuit, a small resistance coil heats up a bi-metal strip which upon expanding completes the circuit of the element to be controlled. This "time delay" is adjusted to make contact in one second, which is ample time to prevent the operation of the undesired control. Alone, this system would not provide for flexible control; for after a few control move-



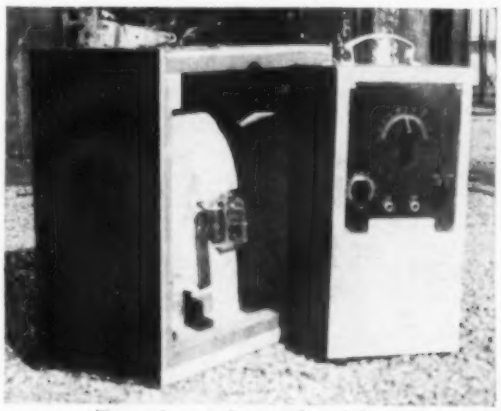




ments the ground pilot would "freeze" at the controls trying to remember which control position he had last and which comes next.

The solution of this problem was the development of an automatic transmitting device which would indicate the position of the controls in the plane by means of colored lights on a panel board and would simultaneously time the transmitted impulses so as to allow the time delay to function. This device was named the *Conjulator*. The Conjulator consists of a revolving disc upon which is mounted a set of contacts energized by means of a click spring and gears. In addition, there is a set of stationary contacts. The diagram clearly shows the arrangement of contacts and brushes. In order to obtain a clear picture of the system, let us go through the complete cycle of radio control. Let us say the rudder is adjusted to a neutral position and motor is in the advanced position. The operator adjusts the Conjulator disc (with all the transmitting switches off) so that the bulb on the panel board indicates that the position of the disc coincides with the neutral rudder and advanced motor setting on the plane. From there on everything is automatic. If we desire right rudder we merely press a button and hold the button down which releases the clockwork in the Conjulator.

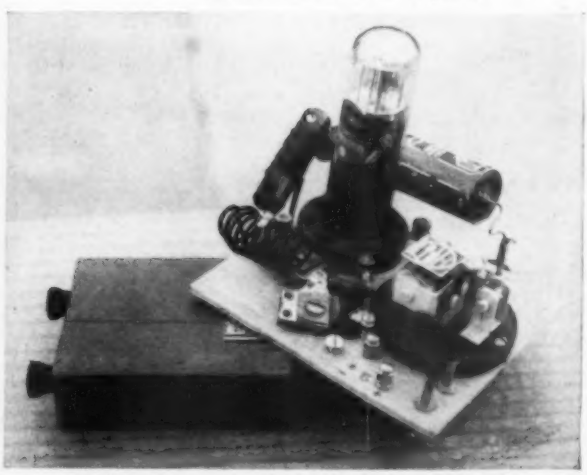
(Continued on page 54)



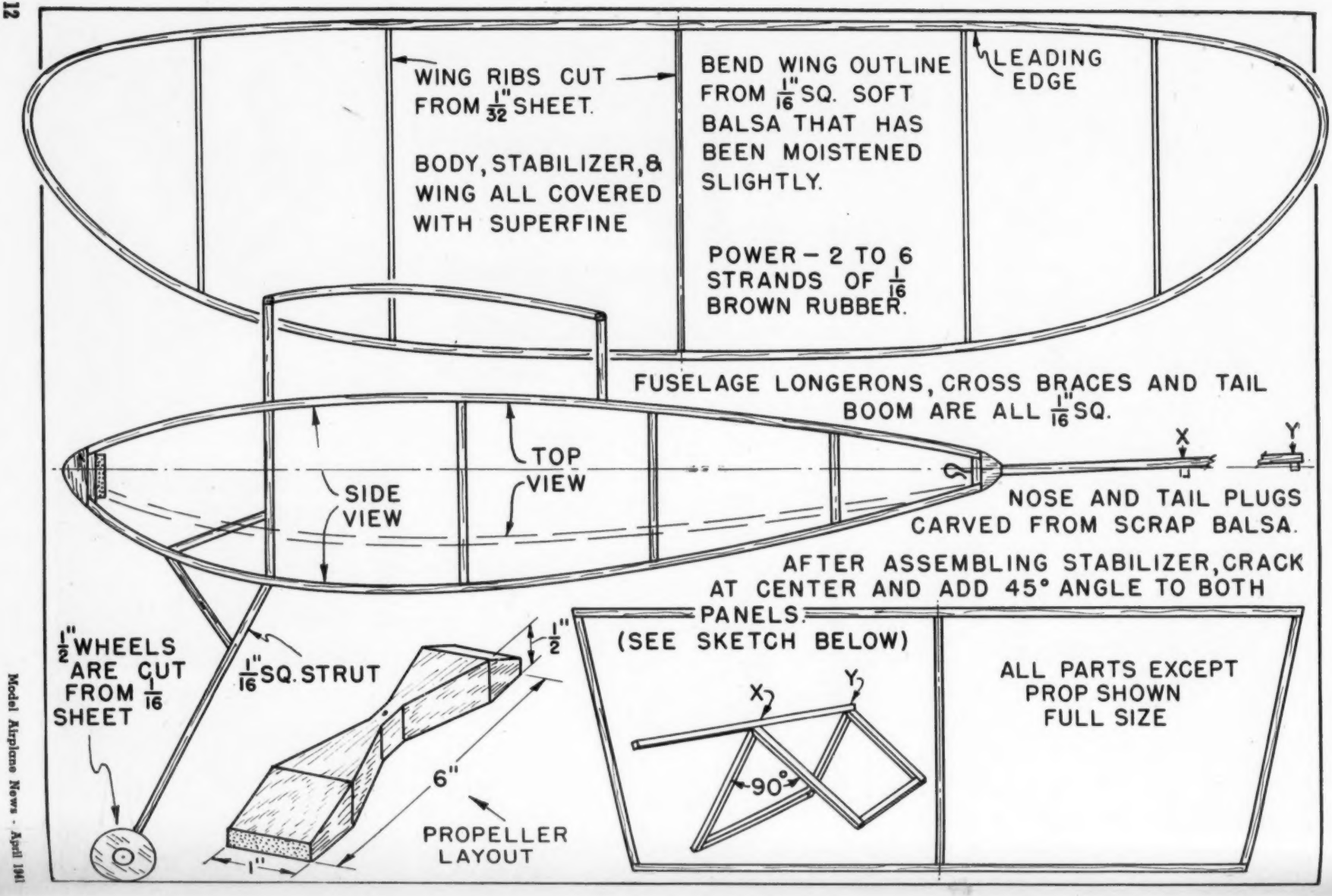
Transmitter and rear of conjulator

Rear view of transmitter

High frequency transmitter



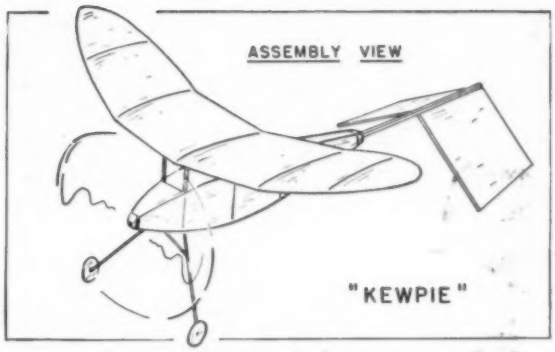
Choke coil on receiver tuning coil and the B battery


WING RIBS CUT FROM 1/32" SHEET.
BODY, STABILIZER, & WING ALL COVERED WITH SUPERFINE
BEND WING OUTLINE FROM 1/16" SQ. SOFT BALSA THAT HAS BEEN MOISTENED SLIGHTLY.
POWER – 2 TO 6 STRANDS OF 1/16 BROWN RUBBER.
LEADING EDGE
FUSELAGE LONGERONS, CROSS BRACES AND TAIL BOOM ARE ALL 1/16" SQ.
X
Y
TOP VIEW
SIDE VIEW
NOSE AND TAIL PLUGS CARVED FROM SCRAP BALSA.
AFTER ASSEMBLING STABILIZER, CRACK AT CENTER AND ADD 45° ANGLE TO BOTH PANELS.
(SEE SKETCH BELOW)
1/2" WHEELS ARE CUT FROM 1/16 SHEET
1/16" SQ. STRUT
1/2"
6"
1"
PROPELLER LAYOUT
X
Y
90°
ALL PARTS EXCEPT PROP SHOWN FULL SIZE

KEWPIE

A Few Minutes Work by Novice or Expert Brings a Thrilling Performance by this Little Plane

BY LOUIS HETLAGE



A simple model that flies indoors or out

HERE is a little skyrocket that will give you hours of fun and excitement. Its design came about one evening at about nine o'clock, the night before a weekly meet held in the auditorium of the school the author attends. In need of a simple design for a speedy assembly, this original was turned out. Came the day of the contest, the model was finished, but it looked like something the cat had dragged in.

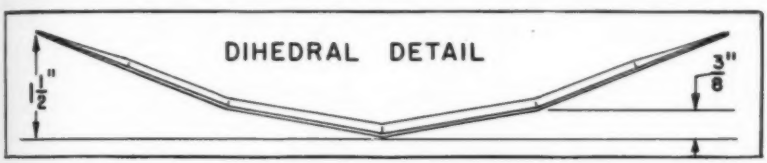
Its first flights were not worth the time wasted in taking them, due to the fact the ship was underpowered. A few more strands of rubber—then came the surprise. The model showed a fast climb, getting upstairs in a hurry and doing a little ceiling-scraping. The total time on that flight was 45 seconds, which is about average for Kewpie, but more is possible with careful adjusting.

A novel feature about Kewpie is its "V" tail. We chose this because of its simplicity and the corresponding decrease in weight. The two-place dihedral also seems to help along with stability.

You should have no trouble in making this ship. The stock used throughout is soft 1/16" square, available at any model shop. The fuselage sides are constructed first, over the full-size plan marked "side view." Allow the cement enough time to dry thoroughly, then lift both sides off the plan. Cut top and bottom cross-braces to length required and assemble both sides. This part of the construction is tedious but necessary.

A piece of 1/16" square is used for the tail boom. It should be 3 1/2" long. Note that it is assembled to the fuselage at a slight angle to provide the necessary angular difference between wing and tail. Assemble the stabilizer, then cover the entire model with superfine tissue. The wheels should be cut from 1/32" or 1/16" balsa and mounted on the landing gear axles. The struts should be splayed out to obtain a tread of abopt 3". When assembling the wing and mounting it on the wing struts, be sure not to use large globs of cement, as that will cause warpage and unnecessaary weight.

The power is six strands (3 loops) of 1/16" brown rubber. For slower and longer flights use four strands. Under power the ship circles sharply to the left and should have about four degrees down-thrust to overcome stalling tendencies under the initial burst of power. If you can't use the local auditorium, fly Kewpie outd ors, as she's a rugged little ship. Happy landings!



WHAT SHALL IT BE—MODELS OR PLANES?

ASKS THE INSTRUCTOR

THE question is "What kind of models are we going to fly?"

Should they look like real planes and perform like "models"? Should they look like most "model" planes—something similar to a real plane, but over-sized as far as control surfaces are concerned, and certainly overpowered in comparison—and fly slow and stately like their full-scale prototype? Should they look like "models" and fly like "models"? Or should they look like real planes and fly like real planes?

We have heard plenty of arguments for all sides from all sides, especially in regard to gas models. Headquarters folk of the Academy of Model Aeronautics in Washington tell us there has been a real controversy raging of late as to just how a model should "look" and fly. In addition to appearance, quite a number of people think the design and performance of models should copy closely real airplanes and to the gallows with all models which don't.

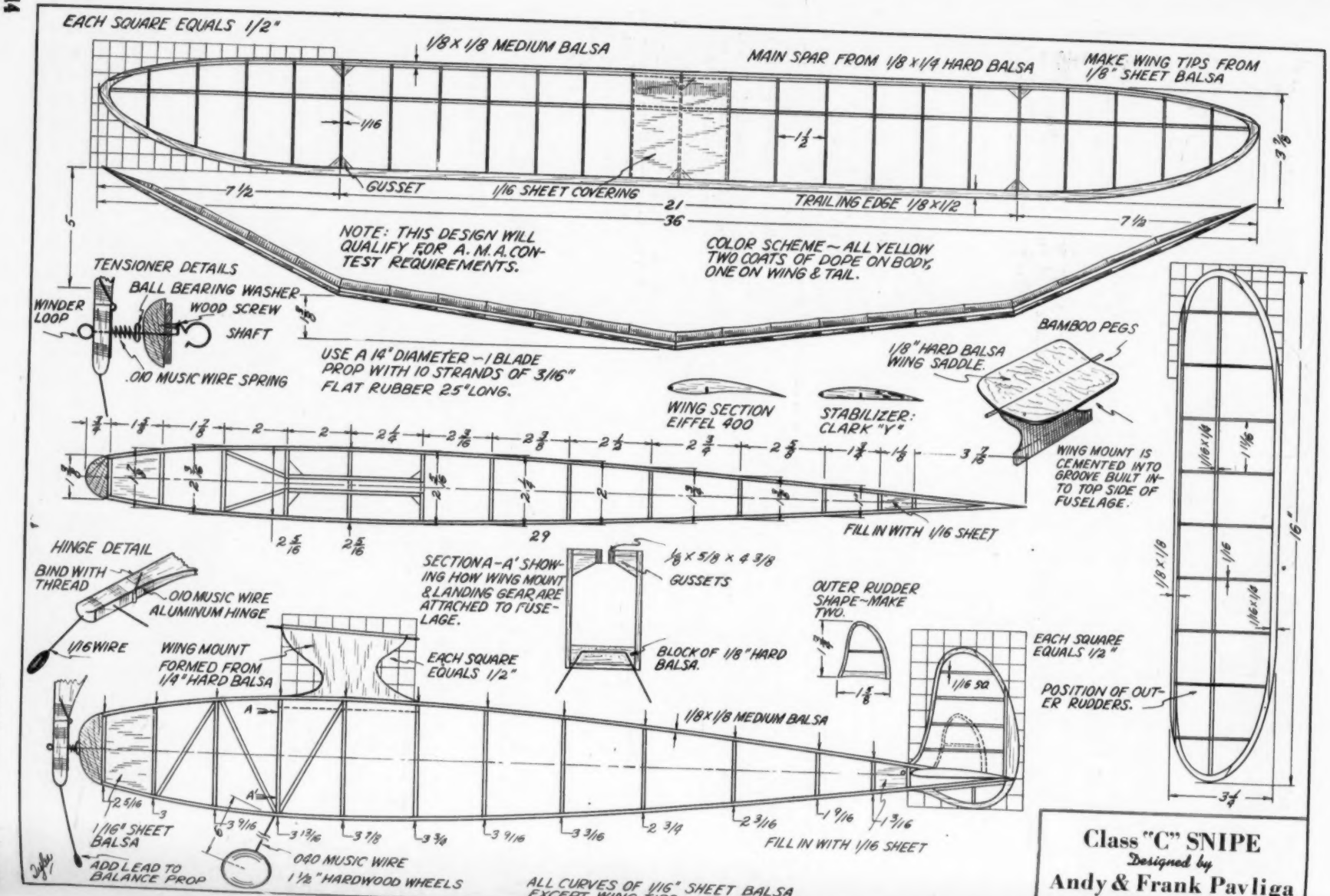
To cite a couple of instances, you may recall Lt. Dallas B. Sherman's idea as presented in the February (1941) "Gas Lines" of *Model Airplane News*. His thought was that every model should be required to carry a certain amount of weight, and in the case of gas models, the amount of weight could be determined by the horsepower of the engine. His views are shared by some distinguished leaders in the aeromodeling field, including Victor Fritz, of Philadelphia, chairman of the A.M.A. Flying Scale Model Committee.

Walt Coburn Jr. and his plane which might be classed with Eastman Jacobs' payload transport ship

You may remember Lt. Sherman's statement "present-day gas models have wandered too far afield" in referring to design and performance. He continued "when we had gas engines to power the craft, we could see no reason why the models so powered should not follow more closely big-ship design; and in this manner teach the lessons to be learned in full-sized aircraft through designs adaptable for full sized machines."

At the Langley Field (Va.) laboratories of the National Advisory Committee for Aeronautics, research engineer Eastman N. Jacobs has the same idea as Lt. Sherman and has been asking that scientifically-minded aeromodelers attempt to emulate the requirements of full-size craft and build models which feature a much heavier wing loading than the majority built at the present time. Mr. Jacobs who "stopped" the

(Continued on page 55)



Class "C" SNIPE

Designed by

Andy & Frank Pavliga

Campbell, Ohio

NATIONALS GO TO CHICAGO

A.M.A. Awards 14th National Championships to Chicago TIMES and Chicago Park District—1500 Contestants, 100,000 Spectators Expected To Turn Out—John Rappold, Contest Director

'41 National Meet Officials look over A.M.A. sanction application. Seated l. to r.—Russ Stewart, Chicago "Times" and F. E. Kardes, Chicago Park District; standing l. to r.—Dan Penny and Steve Meuris, Chicago Parks and Maurice Roddy of the "Times." (Inset) John Rappold, '41 Nationals Director

By ALBERT LEWIS

"Heigh-ho, heigh-ho
To Chi-cago we go!"

OFF-KEY as we may be, undoubtedly you get the idea that the 14th Annual National Model Airplane Championships will be held in Chicago again this year.

The 1941 Nationals will be sponsored by the Chicago Park District and the *Chicago Times* under the sanction of the Academy of Model Aeronautics. Each year the National Meet has grown in scope and attendance to the point where, based on last year's turnout and official police count of spectators, close to 100,000 persons are expected to witness the '41 events, and it would not surprise the sponsors if 1,500 contestants show up.

The dates of the meet are July 1 through 5, and the locale—America's well-known windy city. And as Maurice Roddy, Aviation Editor of the *Chicago Times*, is wont to say, the National Meet is still the National Meet, if only five contestants show up. This is because the competition has been elevated in the minds of our more than two million American aeromodelers to the point where no other contest can touch it for excitement, glamour, good fellowship, and fine flying. But don't think for a moment that the contestants' entry will be limited to five flyers. Not a bit of it! It is with extreme confidence that we predict the July battle will surpass even last year's event, which reached a new high for size and smooth operation.

Hotel Sherman, Chicago, official headquarters

Here are a few reasons why:

Since last year, officials of the Chicago Park District and the *Chicago Times*, who were desirous of sponsoring the 1941 competition, have been meeting regularly; planning ways and means of bettering contest procedure and arrangements. A Committee on Arrangements has been set up with Dan Penny and Steve Meuris, of the Park District, and Russ Stewart and Maurice Roddy, of the *Times*, as members; it is this group which provides the "modus operandi" for this year's Nationals.

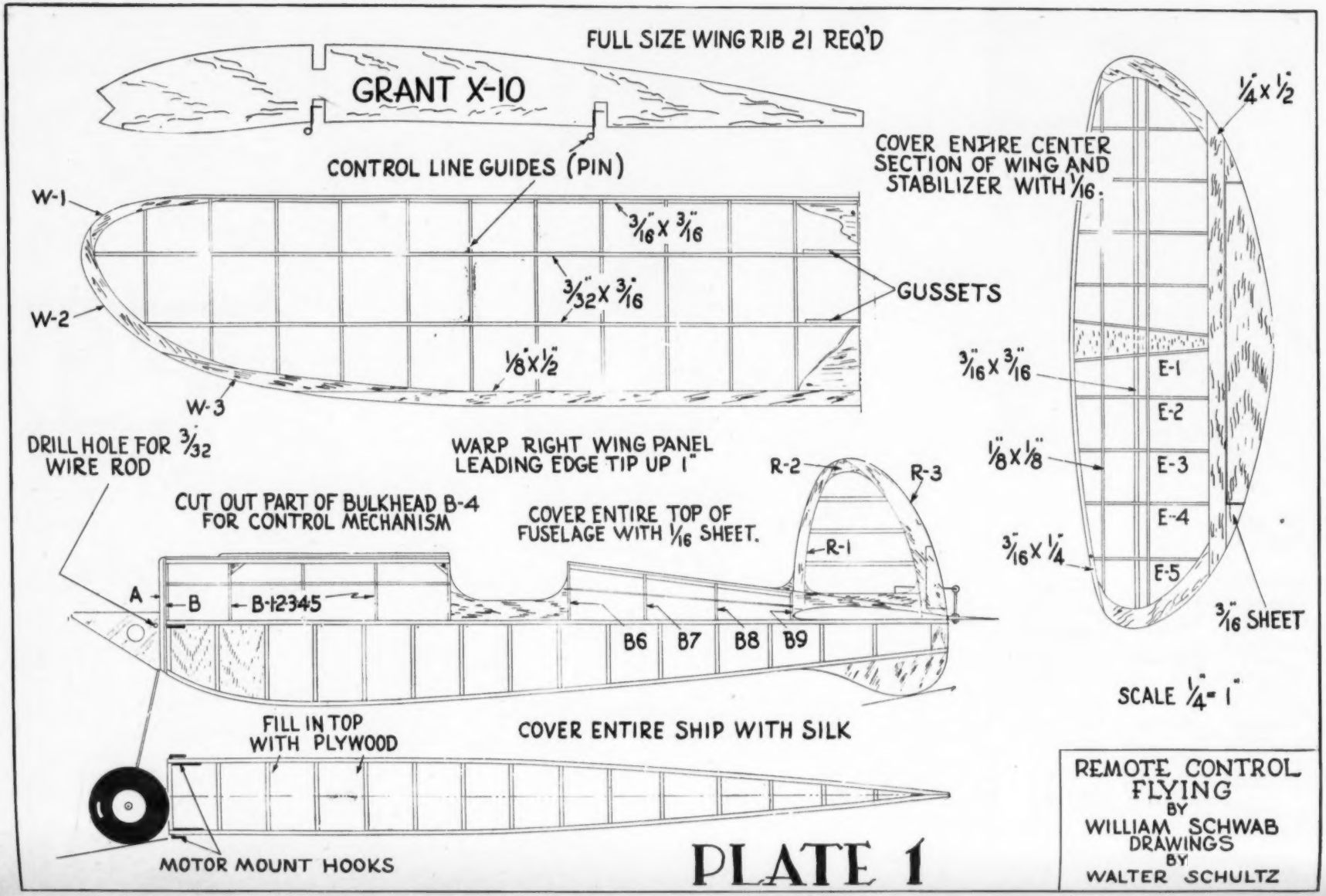
The Park District, which will be concerned especially with the running off of

(Continued on page 50)

Complete facilities for the press, radio television and pony-express representatives are available, sez Maurice Roddy

"Lo, the poor timer!"

From here—to there


FULL SIZE WING RIB 21 REQ'D
GRANT X-10
CONTROL LINE GUIDES (PIN)
W-1
W-2
W-3
3/16" X 3/16"
3/32" X 3/16"
1/8" X 1/2"
GUSSETS
COVER ENTIRE CENTER SECTION OF WING AND STABILIZER WITH 1/16".
1/4" X 1/2"
3/16" X 3/16"
E-1
E-2
E-3
E-4
E-5
1/8" X 1/8"
3/16" X 1/4"
3/16" SHEET
SCALE 1/4" = 1"
DRILL HOLE FOR 3/32 WIRE ROD
WARP RIGHT WING PANEL LEADING EDGE TIP UP 1"
CUT OUT PART OF BULKHEAD B-4 FOR CONTROL MECHANISM
COVER ENTIRE TOP OF FUSELAGE WITH 1/16 SHEET.
R-1
R-2
R-3
A
B
B-12345
B6
B7
B8
B9
FILL IN TOP WITH PLYWOOD
COVER ENTIRE SHIP WITH SILK
MOTOR MOUNT HOOKS
PLATE 1
REMOTE CONTROL FLYING
BY
WILLIAM SCHWAB
DRAWINGS
BY
WALTER SCHULTZ

The little pursuit plane showing movable rudder

Wires to operate control pass under right wing

CONTROLLED LIGHTNING

A Miniature Pursuit Model You Can Control and Maneuver Like a Full Size Plane—From the Ground—And It Can't Fly Away

By WILLIAM B. SCHWAB

AFTER returning from one of our week-end gas model contests a few years ago, in which we lost our ship, someone made the remark: "Why didn't you tie a string to it?" Of course we laughed.

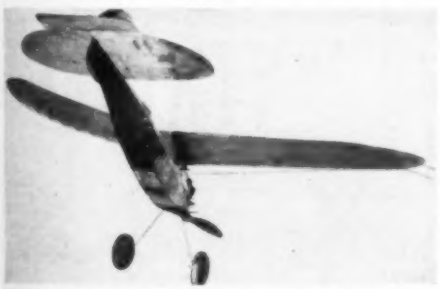
However some time later we began thinking about it, wondering if such a way of flying a gas model wouldn't be possible—flying in a circle. Just for the fun of it, we took one of our old crates and connected a string to the wing tip, one-third from the leading edge. A tab was glued to the rudder and wing to make the ship tend to pull away from the operator or turn sharp to the left, the ship flying in a clockwise direction. We connected it up, started the motor and let it run at half throttle. Surprising as it was, the ship left the ground and flew in perfect circles at about five feet altitude. When the motor cut we could keep the ship in the air long enough to bring it in and set it down next to the booster batteries and gas, by pulling on the string and "kiting" it in the air.

We kept flying for many months in this manner, until one fine day the motor was opened up just a little too much. The ship took off and began to climb to a good fifty feet, and the end of the string. We didn't want to lose the ship, because of a full tank of gas; and then too we didn't have automatic timers at that time. So we held on. Well, the ship went up—the string tightened—down went one wing tip—well, the rest of the ship followed.

After several weeks rebuilding we did away with the old stabs and built new ones, with movable elevators. Wow! what a thrill we had in store for us. After weeks of experiments we succeeded in using two strings for up- and down-control of the flippers; these same two strings also supported the ship while flying in circles. These strings were connected to a small joy-stick about a foot in length. The stick was made so we could strap it under our belt, leaving us free to walk about, and our hands free for controlling, much the same as in a real ship. With this system the ship, about thirty feet away, flying around the operator in circles, could be controlled perfectly. We could actually set the ship on the ground with the motor running and using the stick,

(Continued on page 48)

The little plane is tethered and controlled with this joy-stick and rudder-bar



Here's how it looks speeding overhead

The deflected elevator is shown on the stabilizer rear edge

Controls on the tail operated by wires

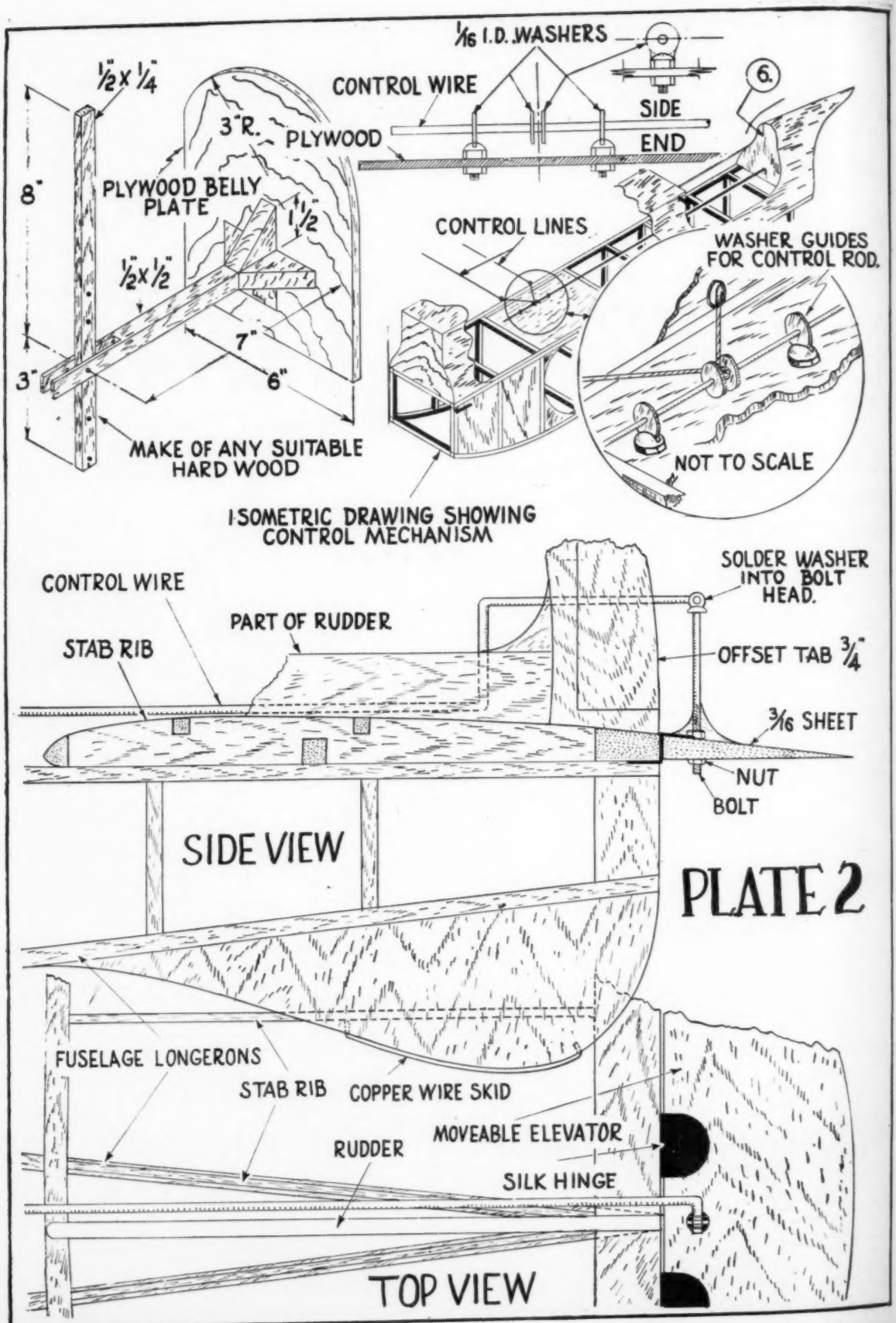
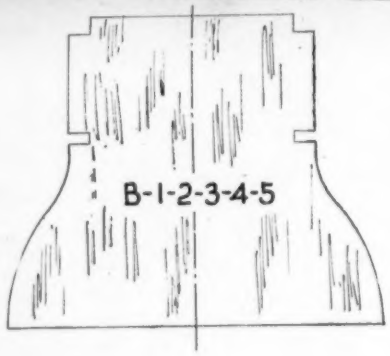
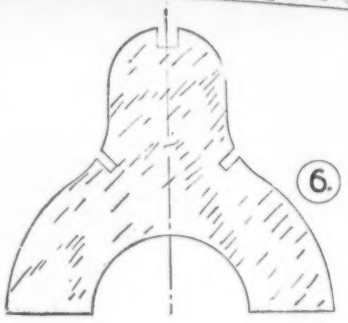
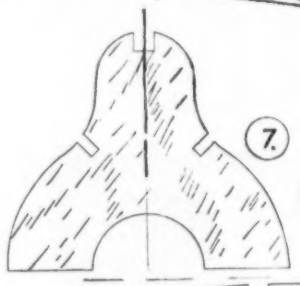
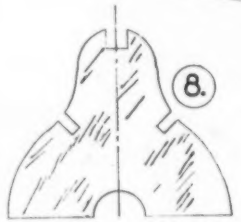

1/16 I.D. WASHERS
CONTROL WIRE
SIDE
END
6.
1/2 x 1/4
3" R.
PLYWOOD
8"
PLYWOOD BELLY PLATE
1 1/2"
1/2 x 1/2
7"
3"
6"
MAKE OF ANY SUITABLE HARD WOOD
CONTROL LINES
WASHER GUIDES FOR CONTROL ROD.
NOT TO SCALE
ISOMETRIC DRAWING SHOWING CONTROL MECHANISM
SOLDER WASHER INTO BOLT HEAD.
CONTROL WIRE
PART OF RUDDER
STAB RIB
OFFSET TAB 3/4"
3/16 SHEET
NUT
BOLT
SIDE VIEW
PLATE 2
FUSELAGE LONGERONS
STAB RIB
COPPER WIRE SKID
MOVEABLE ELEVATOR
RUDDER
SILK HINGE
TOP VIEW

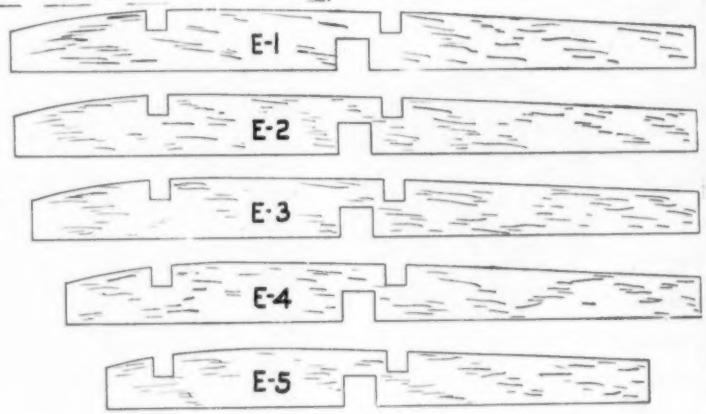
PLATE 3

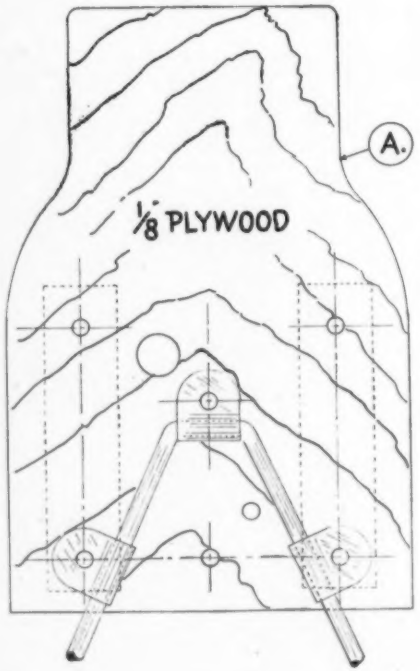


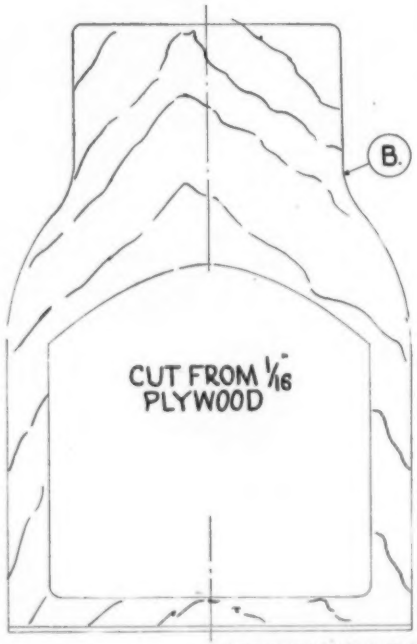


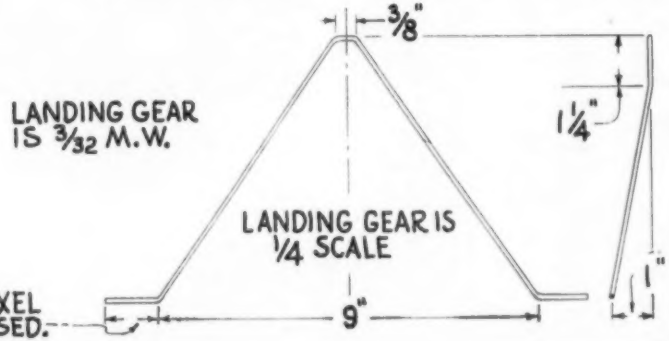












DIMENSION FOR AXEL TO SUIT WHEEL USED.

AIR YOUTH OF AMERICA

Important News

Winners of Air Youth Medals Announced

THE Air Youth medals which are offered "to encourage wider participation in the flying of model planes by American youth" will be made available in state-wide contests during the coming season, Ernest Gamache, executive director of Air Youth announces. Last year's winners of these medals are now made public.

Air Youth hopes, by working with existing regional and state contest committees, to encourage new model builders to participate in their local meets. It is hoped this will encourage members of Boy Scouts, Y.M.C.A. clubs and school groups to take part in model aviation.

The Air Youth awards will be made for best performances made by rubber-powered cabin models having wing areas of one hundred to two hundred and ten square inches, which are entered in recognized State Meets held between May and September, 1941. Both Moffet- and Wakefield-event type planes come within scope of the awards, thus allowing considerable latitude and conforming to events already included in most state meets.

Winners of 1940 Air Youth of America Awards. Left to right: Wilfred Bobier 1st place, George Sass 2nd and Bob Boomer 3rd

About Modelers

Information concerning the awards has already been sent to state contest directors in whose meets medals were awarded last year. Directors of other state or regional meets desiring this data should write directly to Air Youth of America, Rockefeller Plaza, New York City.

The list of last year's respective winners and the contests in which the medals were awarded follows:

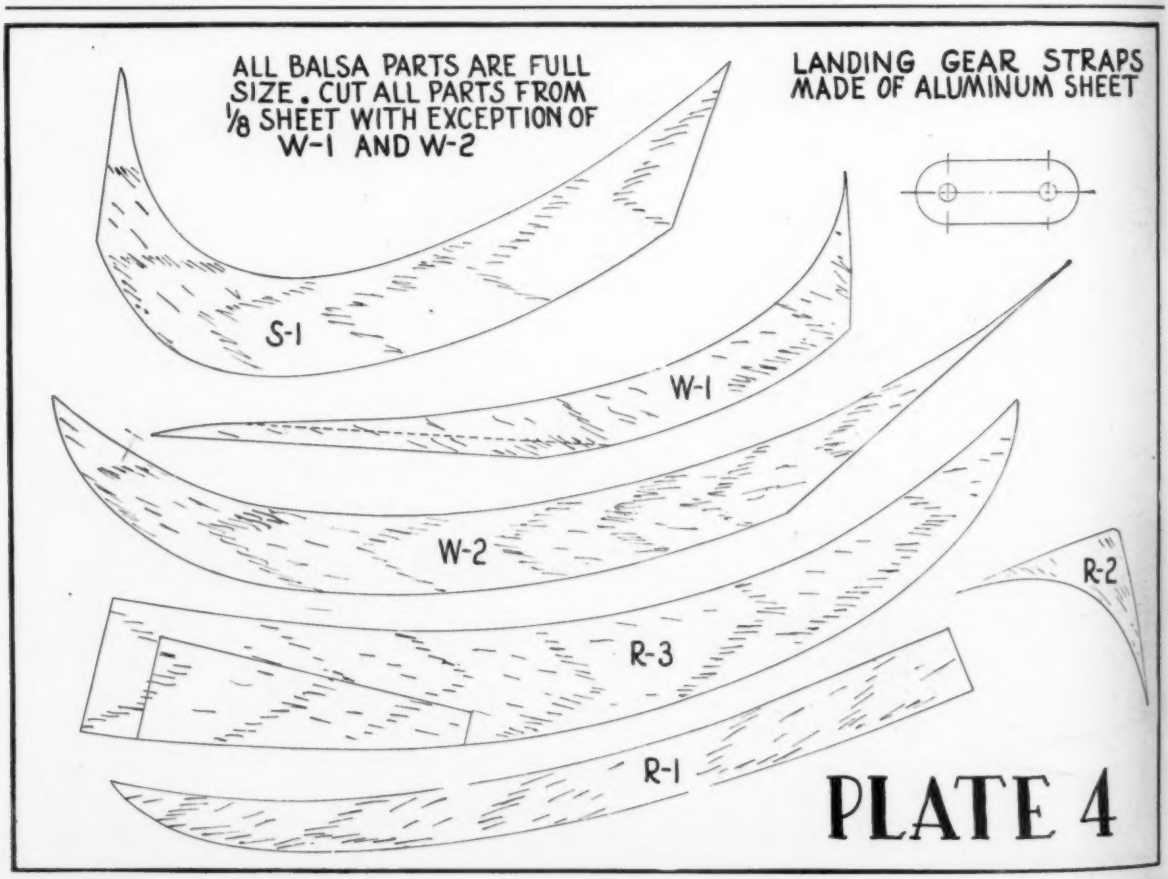
District of Columbia

Contest: National Aviation Forum Model Airplane Meet
Winners: Norman S. McMorrow, Jr., 817 L. Street, S.E., Washington; Donald Sawtelle, Jr., 2910-18th St., Washington; Robert H. Davis, Jr., 628 S. Fifth Street, Clarksburg, W. Va.

Louisiana

Contest: Gulf States Model Airplane Meet

(Continued on page 46)



The Blackburn "Botha," Britain's new reconnaissance torpedo-carrying bomber. (Acme)

FRONTIERS

Highlights of the Latest Developments in Aviation

By ROBERT C. MORRISON

The power to start this Cub's motor is supplied by a rubber-band motor. (Acme)

FROM reliable sources we have learned Germany is busily engaged in mass production of submarines, by "farming out" parts to manufacturers throughout the country and assembling them in the many German dry-docks. Being small, short-range subs, it may be possible for Germany to produce about 200 this year, and she may pull a surprise by building even more than that amount in this new production era.

Surprises do occur often these days; i. e., the American aircraft production boom. At the beginning of the war Germany had slightly more submarines than the United States and double that of Great Britain. Since this number, a little more than 100, was the Germans' chief mainstay in sinking approximately one-sixth English shipping so far, trebling this number forms a vital Nazi weapon. Italy is not very far behind Nazidom in the submarine quota either, and its undersea fleet may be of help to Germany.

Great Britain has yet to master her defense against the submarine, and if "Hitler the Furious" should decide to thrust a submerged blitzkrieg at British boats with his new subs together with his temperamental air fleet, British shipping will become a very inefficient function of the Empire's economic structure. When one is hungry in Great Britain he cannot go in the fields and nibble on

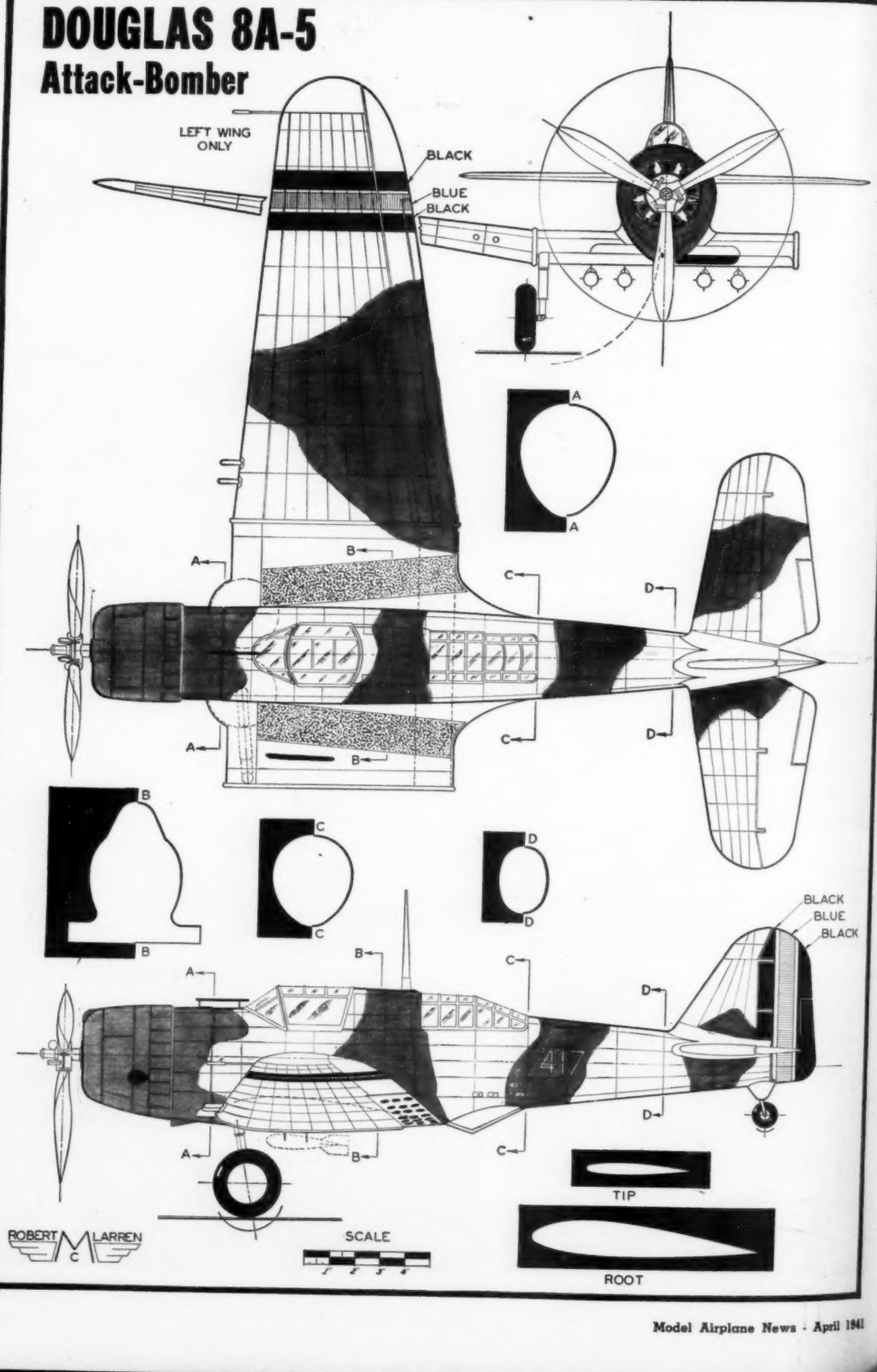
(Continued on page 34)

Thirty-three new Vultee trainers ready for flight delivery to the army at Moffett Field. (Inter'tional Photo)

23 Douglas bombers on the production line

One of these Boeing B-17C bombers is turned out every two days (Acme)

DOUGLAS 8A-5
Attack-Bomber



Norwegian Nemesis

THE PLANE ON THE COVER

By ROBERT McLARREN

The 1200 hp. Douglas 8A-5 attack-bomber flying under Norwegian colors

NATIONS may rise and crumble but their peoples never die. Five times Norway has been crushed and beaten. Four times it has risen again. And today, its free people in Britain and their subjugated brothers in Scandinavia are continuing the struggle for united existence, begun in the ninth century under Harald Haarfagr when he united the seven tribes of Teutonia into a single group. Neutral in the last great World War, Norway nevertheless began the organization and development of an air force as far back as 1915 when the Navy Aircraft Factory at Horten was constructed. Later the Army Aeroplane Factory was built; and since that time the Norwegian Air Force has consisted mostly of native-designed and constructed planes.

In 1938, when the European political scene became a bedlam of threats, broken promises and treachery, the Ministry of Defence began the serious work of increasing the Norwegian Air Force. Price, unfortunately, was the prime consideration in the purchase of imported flying machines and as a result a great influx of German-built fighting and bombing planes resulted.

The famed Junkers Ju. 52 and Ju. 86 trimotor and twin-motored bombers respectively were bought, as well as a number of British Hawker "Audex" and "Hornet" reconnaissance and fighter craft. A small number of Vultee V-11 Attack planes and Northrop 2E ships was also purchased.

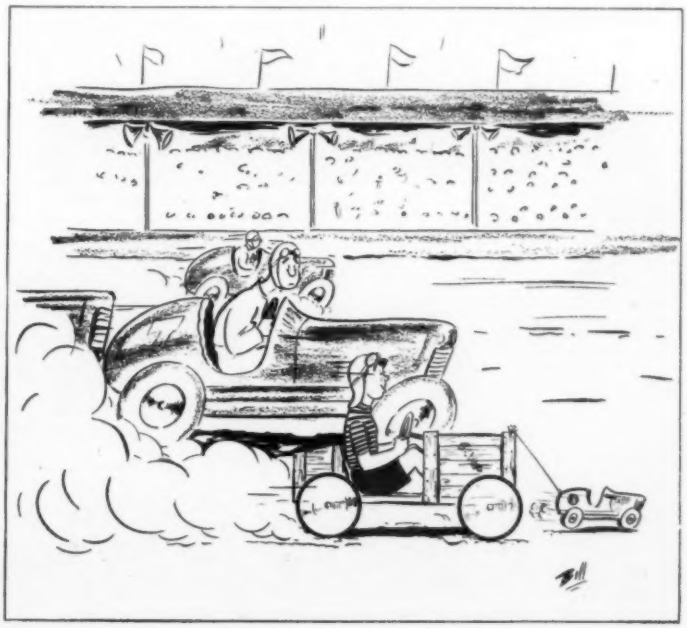
The Norwegian Air Force, both military and naval divisions, was utterly annihilated two years ago in the German blitzkrieg on Narvik. The escape of Chief Staff Officer Captain Easen Boe, whose nephew is now an engineer with Vultee Aircraft in Downey, California, and half-a-hundred of his men and machines during the bloody battle is one of the miracles in modern warfare. Taking flight in a squadron of antiquated Fokker seaplanes, the men took off from the demolished Karljohansvern Seaplane Station at Horten, only after it was obvious that further aerial action against the smashing, attacking Nazi air machine was foolhardy.

Now, more than a year later, a newer and greater Norwegian Air Force is set to take wing against the conquerors of their landsmen; purchases of King Haakon VII's government, even after the collapse of the Norwegian nation, are being met according to original terms. With these ships the new Norwegian Air Force is flying against Hitler from bases within the British Isles and an admirable string of victories has been registered to the newly-promoted Colonel Boe and his men.

Two types of ships are being received near London by the provisional Norwegian Government Air Arm, the Northrop seaplane attack-bomber and the famed Douglas single-engine monoplane Model 8. Acceptance and tests are being conducted personally by Commander Kristian Ostby, former chief test pilot of the Norwegian Naval Seaplane Factory and now head of the Norwegian Aviation Mission in this country. Also being delivered to the Norwegian forces in England, via Canada and Newfoundland, are the heavily-armed, fast and maneuverable Douglas 8A-5 attack-bombers, our Plane on the Cover for this month.

This Plane on the Cover is a plane with a history, for it has gone through a number of incidences which has shaped the course of aviation history. This ship began under the skilful pencil of pioneer Jack Northrop when he presented the radically new Northrop 2E attack-bomber. Sold throughout the world, this ship has figured in four different civil and international wars. With the purchase of the Northrop interests by Donald Douglas the design went along with the other assets, and a few months later emerged as the Douglas 8A attack-bomber. Sold to Iraq, Argentina and the Netherlands in large quantities, this latest version, the 8A-5, is the most formidable model of the wicked ship and, in addition, presents several new and progressive refinements.

GENERAL ARRANGEMENT: The Douglas 8A-5 is a low-wing, cantilever, single-engine, monocoque two-seat attack-bomber with retractable landing gear and is powered by a single radial, air-cooled engine. The crew's quarters is situated atop the central portion of the fuselage, completely enclosed by a sliding glass canopy. The engine is mounted in the nose and is the conventional tractor, full-cowled version. The landing gear folds inward into special "dishpans" located forward of the wing-to-fuselage joint. The entire ship is camouflaged and marked with the Norwegian Royal Air Force insignia.



POWER PLANT: The Douglas 8A-5 is powered by a single Wright "Cyclone" nine-cylinder air-cooled radial engine, model GR-1820-G103. This huge engine is rated at 625 horsepower at 1900 r.p.m. at 30 inches of mercury manifold pressure at cruising altitude; 860 horse power at 2200 r.p.m. at sea level at 37.7 in. Hg. full throttle, and has 1,000 horsepower available at 2300 r.p.m. at 42.5 in. Hg. for take-off and five minutes duration at sea level. This drives a three-bladed Hamilton Standard controllable-pitch propeller equipped with hydraulically controlled pitch-changing units. The fire-wall is located just forward of the center section leading

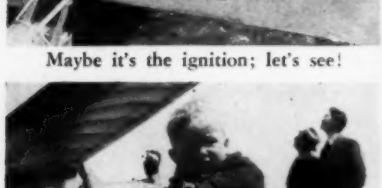
(Continued on page 56)

Well here goes!—Ready, timer!!

Switch on! Contact!

Something's wrong! Wonder whasamatta?

Maybe it's the ignition; let's see!



Never mind, timer; it won't start

%*§*?%$@ doggone motor!!!

GAS LINES

AIR WAYS

NEWS OF MODELS AND BUILDERS FROM ALL PARTS OF THE WORLD

BIGGEST news this month is definite announcement that the 1941 Nationals will be held at Chicago from July 1st through the 5th. The efficiency of the Academy of Model Aeronautics is demonstrated by getting this news to you at an early date. Usually modelers are in doubt up to the very last minute as to where their annual trek will take them; this year plenty of time has been allowed you to make plans and increase your bankroll to necessary proportions.

Here's to seeing you at the Nationals!

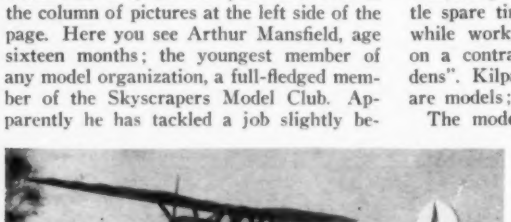
One of the mistakes younger modelers make, because of over-enthusiasm and super-imagination, is tackling the creation of a gas job as their first model-aeronautical undertaking. Most of us hate to begin in the kindergarten class, it is true; but it is essential to thoroughly understand fundamentals before struggling with complex problems.

However this does not mean that very young modelers, with some experience, are not adept at this art. As a striking illustration of this, we call your attention to the column of pictures at the left side of the page. Here you see Arthur Mansfield, age sixteen months; the youngest member of any model organization, a full-fledged member of the Skyscrapers Model Club. Apparently he has tackled a job slightly beyond his years. Like most modelers he starts in with expectation and enthusiasm, exhibiting considerable persistence, but in the end is thwarted by factors beyond his ken. This young man, unlike many, recognizes his mistake and turns his attention to a less complicated problem in aeronautics —a glider. Despite this, it has been verified by other Skyscraper Club members that young Arthur knows better how to handle a model without breaking it, than most full-grown men. We will watch with interest the progress made through the coming years by this young model fan.

We suggest beginners follow Arthur's example; start their aviation career with either a glider or some simple stick model, easy to build and a consistent flier.

We present some interesting models this month. Picture No. 1 shows one built by Donald Kilpatrick of 1746 Cedar Avenue, Montreal, Quebec, Canada. Donald originally became interested in this sport through reading MODEL AIRPLANE NEWS and is now studying engineering at McGill University. His ship is the result of a little spare time "snatched" at odd moments while working at Canadian Vickers Ltd. on a contract for Handley-Page "Hampdens". Kilpatrick doesn't say whether these are models; we assume they are.

The model is an amphibian of original design. Do not let the absence of wheels fool you, for they are there—buried deep in the snow. It has a wing area of 7 sq. ft. and weight of 3-1/2 lb., including all gadgets. Its glide, with a load of only 8 oz., is not bad. So far the ship has been test-glided and floated in a tank to ascertain its balance. How-

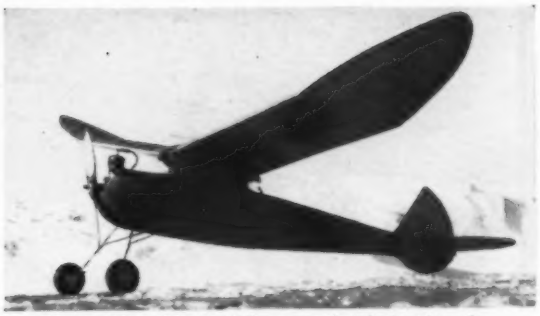


Pict. 10. Not a real plane; just a model Westland "Lysander"

Guess I'll stick to gliders!

Pict. 9. Edward Soltis with a fleet of his ships

Pict. 1. Don Kilpatrick's seven-foot amphibian, keeping its wheels cool



Pict. 2. This "Champ" flew out of sight in 3½ min.

ever, unfortunately circumstances have prevented flight tests. Kilpatrick explains as follows:

"An inverted motor was required but it appeared that my motor was not designed to run this way; it was one of Ohlsson's first jobs, about 1936 or 7. Anyway, I tried in vain to get it running smoothly. A few days ago, after running spasmodically for a minute or two, it blew up with a most alarming report. It was not just another back-fire, for the force was so terrific that the model jumped clear off the floor, the motor proceeding to tear itself out by the roots, including condenser, coil and most of the wiring system, together with motor mount beams, bolts and nuts.

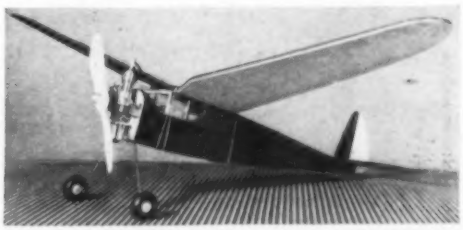
"No doubt this will appeal to the sense of humor of other builders, but I assure you it did not strike me as funny at the time."

Little damage was done as the motor unit came out en masse; however, Kilpatrick says, before further test flights it will probably be necessary to install a modern motor designed to run in inverted position. The hull of the model is single-stepped and of 1/16" balsa planking.

Kilpatrick regrets the lack of time he has for models; most of it is taken up with engineering-course problems presented by the war. We venture to say when an efficient motor is installed in this ship it will fly well, as the design is excellent; weight being low and thrust line high.

One of the finest gas models ever designed was the "Champ," plans for which appeared in our December 1940 issue. Picture No. 2 shows a ship built from these plans, by Robert Zellner of 220 S. Madison Street, Green Bay, Wis. It is powered with a Super Cyclone and weighs just 3 lbs. 4 oz. He says it is the best plane he has ever built and shows great promise, though it hasn't been thoroughly tested. On its eighth flight, with the engine just about wide open, it did 3-1/2 min. out-of-sight on a 20-sec. engine run. If Zollner doesn't think this is thoroughly testing his ship, we are anxious to know what he thinks a real test should be!

Pict. 4. A landplane equipped with skiis



Pict. 3. Frank Ehling's Atom-powered Class A ship

Pict. 5. Two small but fine fliers by Vernon F. Joners

He comments favorably on our suggestion, in the January issue, that a weight-carrying event be included in official contests; however he says the requirement of a weighted pilot would make many planes obsolete. Evidently he misunderstands, for this event would not be inserted in place of another, but in addition to another event; so that old planes could be flown, as well as this new type.

Pict. 6. John Svenson with his 9-foot plane

Frank Ehling of 51 Hancock Avenue, Jersey City, N.J. is noted for two things: Building models of unusual design and winning contests; usually combining the two most successfully. We are amazed therefore to receive picture No. 3, showing one of his models which is indeed very orthodox. Nevertheless it embodies the excellent workmanship common to an Ehling model. Some idea of its small size can be obtained by comparing it with the Atom motor mounted at the nose.

Allan Preston of Springfield, Mass. sends us picture No. 4, showing an excellent ski model he has built. He says:

These skiis work very well with a crust on the snow; however with soft snow larger ones are required. They are at-

(Continued on page 41)

Pict. 8. Group of fans and models assembled at the recent Miami meet

Pict. 7. Directors and sponsors of the Gulf Coast Model Championships and trophies awarded as prizes

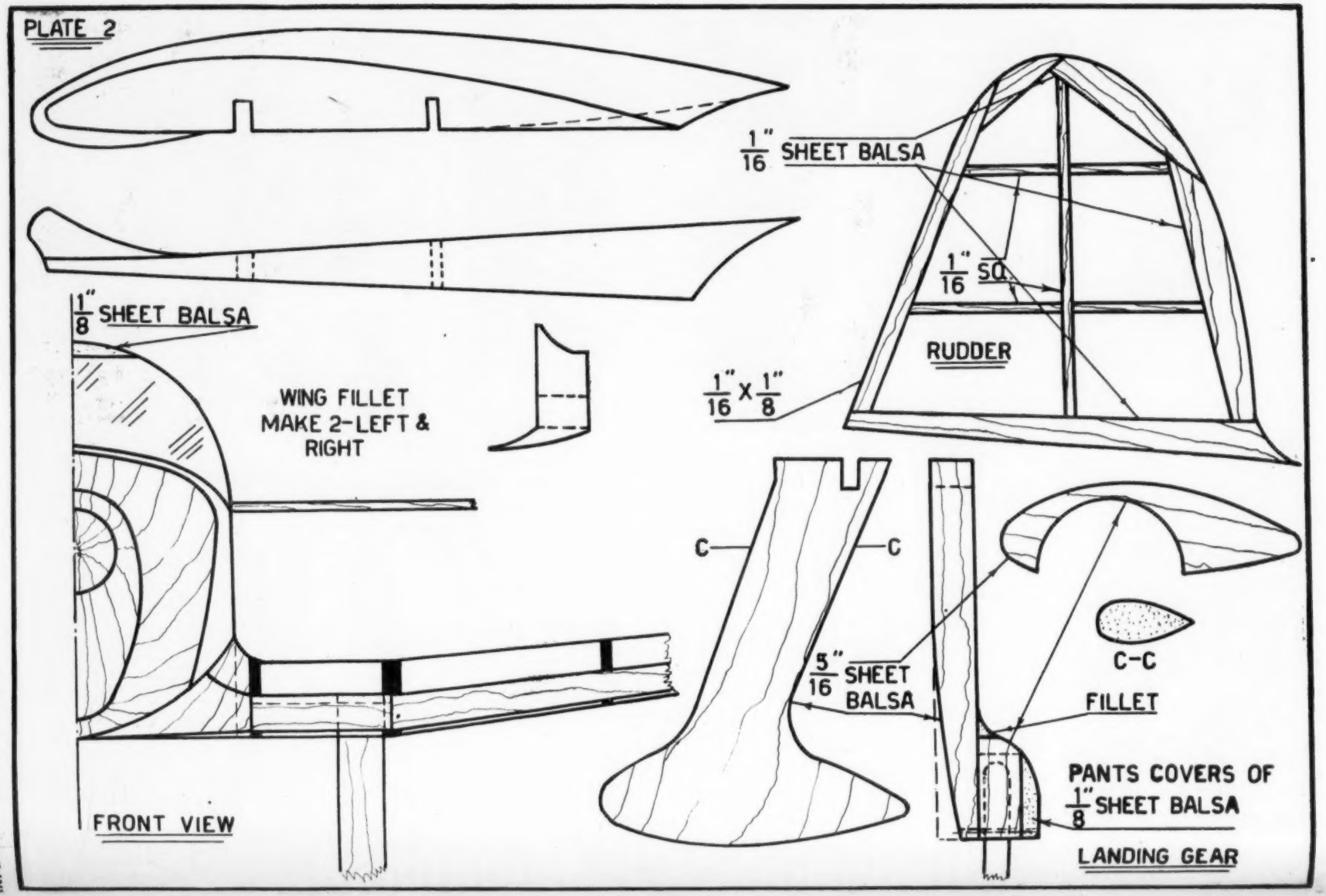


PLATE 2
1/16" SHEET BALSA
1/16" SQ.
RUDDER
1/8" SHEET BALSA
WING FILLET
MAKE 2-LEFT &
RIGHT
1/16" X 1/8"
C
C
5/16" SHEET
BALSA
C-C
FILLET
PANTS COVERS OF
1/8" SHEET BALSA
FRONT VIEW
LANDING GEAR

THE AERONEER TAKES FLIGHT

Complete Your Fleet of Flying Scales by Building This Realistic Simple High-Performance Sportplane

The model Aeroneer in full flight, fast and stable

BY HERBERT SPATZ

A LOW-WING, all-metal, sportplane of exceptionally clean design is the Aeroneer. The 125 hp. Menasco C-4 engine pulls it at a 150 m.p.h. clip. Besides being moderately priced the ship carries many accessories, including an electric starter, hydraulic brakes and wing flaps, which bring the landing speed down to 41 m.p.h.

Our model is accurate in all respects, except those usual changes necessary to produce a good flying scale model. In action it makes a beautiful sight, leaping into the air and making long fast flights. Indeed the Aeroneer makes a worthy addition to any model builder's fleet. Well, let's start; what're we waiting for?

Fuselage

First join plates 1 and 3 at K-K, building the sides in the usual manner. The entire base frame is 1/16" square hard balsa. Don't use too much glue; just enough to hold the joints together. To obtain the top and bottom cross members, double the sizes in the plan. Notice the bottom cross member at station 1 tapers inward.

Next cut the formers from 1/16" sheet balsa (plate 5) and cement in their respective places. Put in the stringers (1/16" square balsa). Block S is shaped from a 9/16" x 1-1/2" x 2-1/2" balsa block. The cabin top, between formers 2 and 3, is cut to shape from 1/16" sheet balsa and cemented in place. Windshield-former P is cut from 1/8" sheet balsa and cemented to former 2. The rear block is carved as shown on plate 3. The block is 1" x 1" x 2-3/4" balsa. First carve the block to fit the body then hollow it out to make the walls about 1/8" thick.

The rear mount is fitted from 1/8" sheet balsa. Before cementing this in fasten the hook to the mount, using plenty of glue, then attach the entire unit to the rear block. The tail wheel is attached to the block, which is now cemented in place and smoothly finished with ten-nought sandpaper.

The front cowling block is carved from a 2-1/4" x 2-1/2" x 3-1/8" balsa block. The block is cut in half as straight as possible then lightly glued together. The outside shape is worked in by carefully following the plans (plates 1 and 3) along the outlines of the body's first section. After carving to rough shape with a knife, use sandpaper to attain final shape. Next cut the block apart and carefully hollow out to a wall thickness of approximately 1/8" or thinner. Finish the nose by making the bearing block fit the front of the cowl. Glue two strips of 3/32" square balsa to the rear of the bearing block to prevent turning; also insert a length of aluminum tubing for the bearing. The wing mounts A are cut from 1/16" sheet balsa and are securely glued in place.

Tail

The stabilizer is shown on plate 4, the rudder on plate 2. Both are built as shown. Smooth all tips with sandpaper.

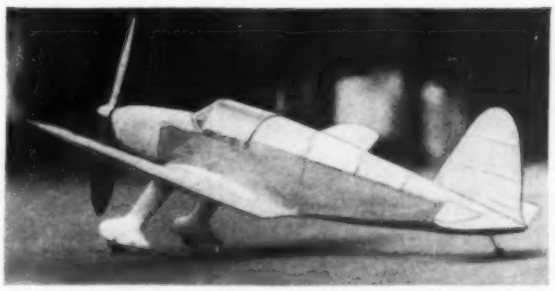
Wing and Center Section

As the center section is the base of wing, we'll tackle that first. It is shown on plate 1. The ribs (R-1) are cut from 3/32" sheet balsa, although 1/16" ribs may be used instead. Ribs are shown on plate 5. The center section has three spars while the wing has only one. The wing fillets are carved from 5/8" x 1" x 6" soft balsa blocks. Adjust the fillet to fit the body and center section rib, consulting the plans frequently.

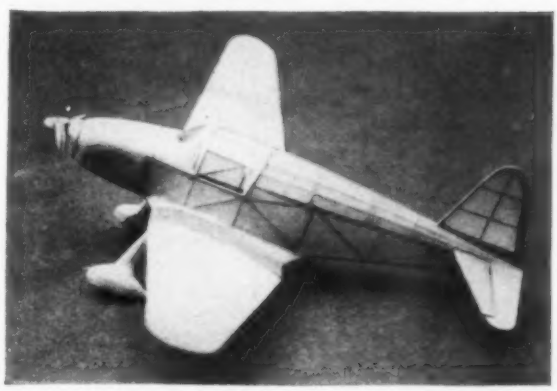
Cut slots to take the center section spars, which spars pass through the wing mount A. Make sure that the center section's angle of incidence is zero. Be sure to use two full-length, single center spars in this section. Streamline the leading and trailing edges to conform with the airfoil; this is true on wing and center section. Finish the fillets so they appear to merge into the center section, then smooth with fine sandpaper.

The wing panel shown on plate 4 is the right wing. To obtain the left panel take a sheet of carbon and a sheet of white paper. Place the carbon black side up, the white on top, then the plan on both, and trace. The wing spars' leading and trailing edges are tapered before gluing the ribs on (dimensions are given on plate 4). Rib R-1, on the wing, is offset 1/8" toward the wing

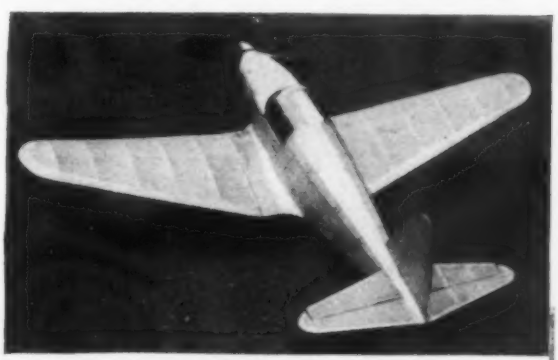
(Continued on page 34)



Its large propeller provides long flights



Streamlined and graceful yet of simplest construction



A large wing facilitates ground take-offs

PLATE 1

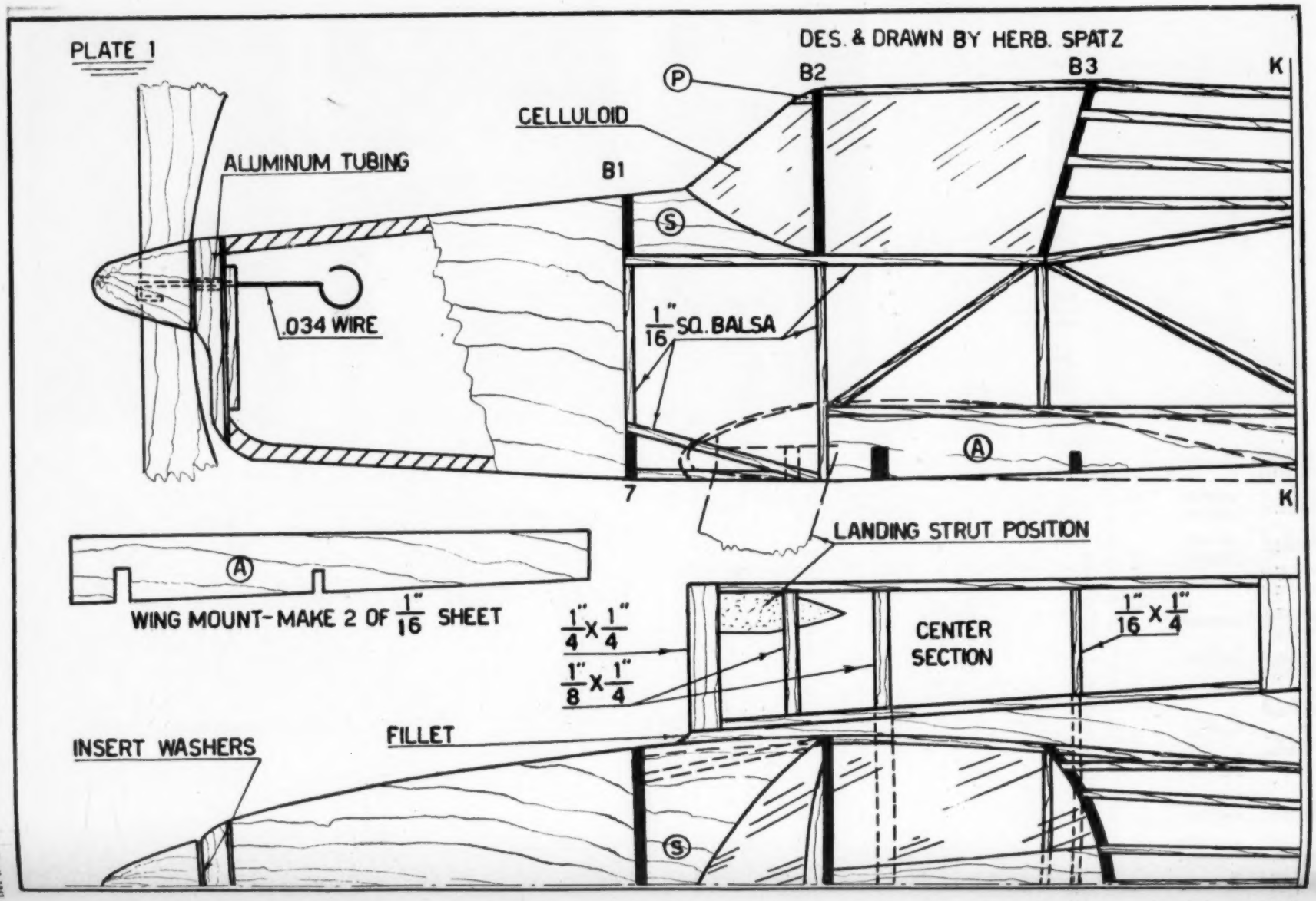
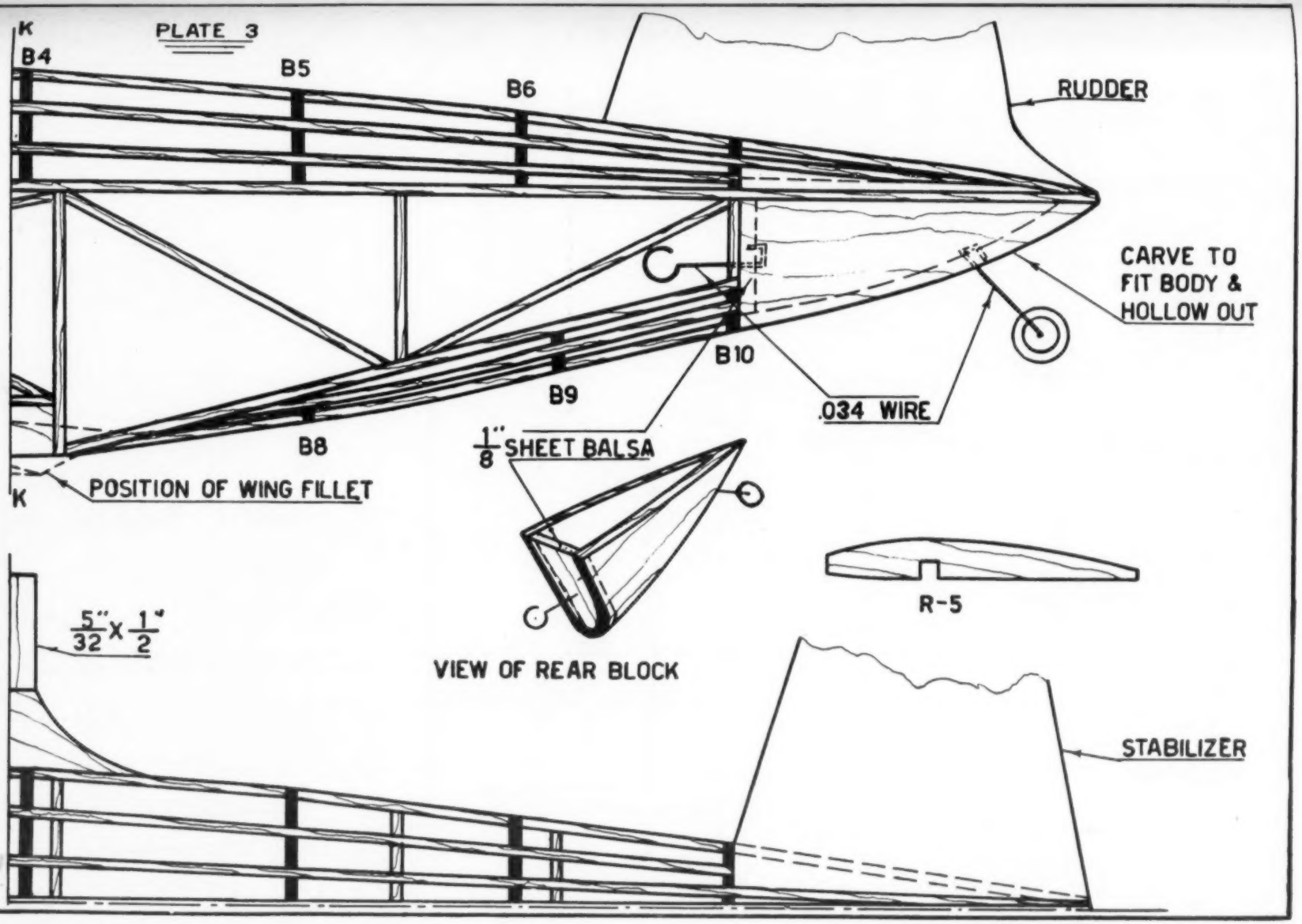

DES. & DRAWN BY HERB. SPATZ
P
B2
B3
K
CELLULOID
ALUMINUM TUBING
B1
S
.034 WIRE
1/16 SQ. BALSA
A
7
K
LANDING STRUT POSITION
A
WING MOUNT-MAKE 2 OF 1/16 SHEET
1/4 X 1/4
1/8 X 1/4
CENTER SECTION
1/16 X 1/4
INSERT WASHERS
FILLET
S

PLATE 3


K
B4
B5
B6
RUDDER
CARVE TO FIT BODY & HOLLOW OUT
B10
B9
.034 WIRE
B8
1/8" SHEET BALSA
K
POSITION OF WING FILLET
R-5
5/32" X 1/2"
VIEW OF REAR BLOCK
STABILIZER

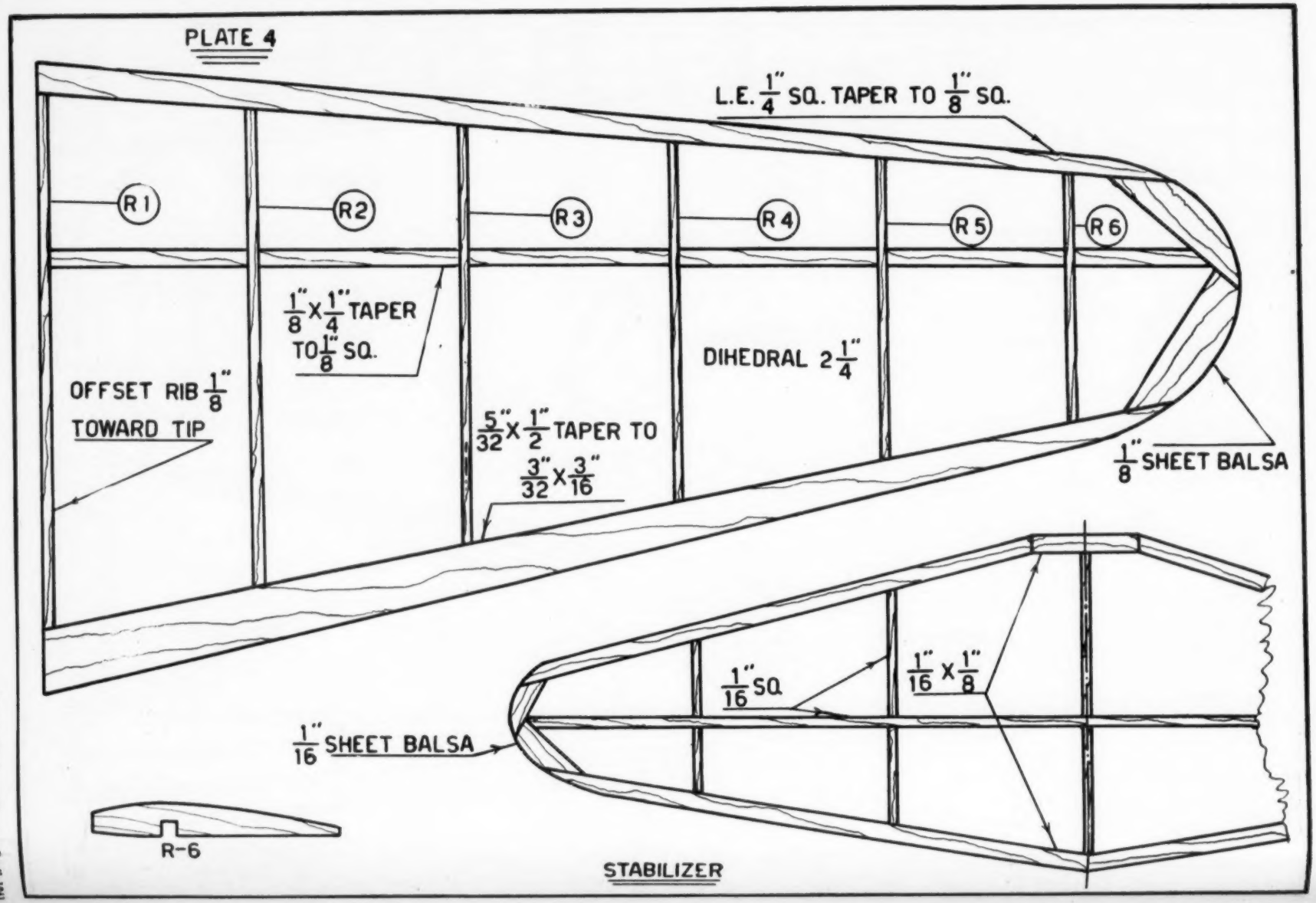
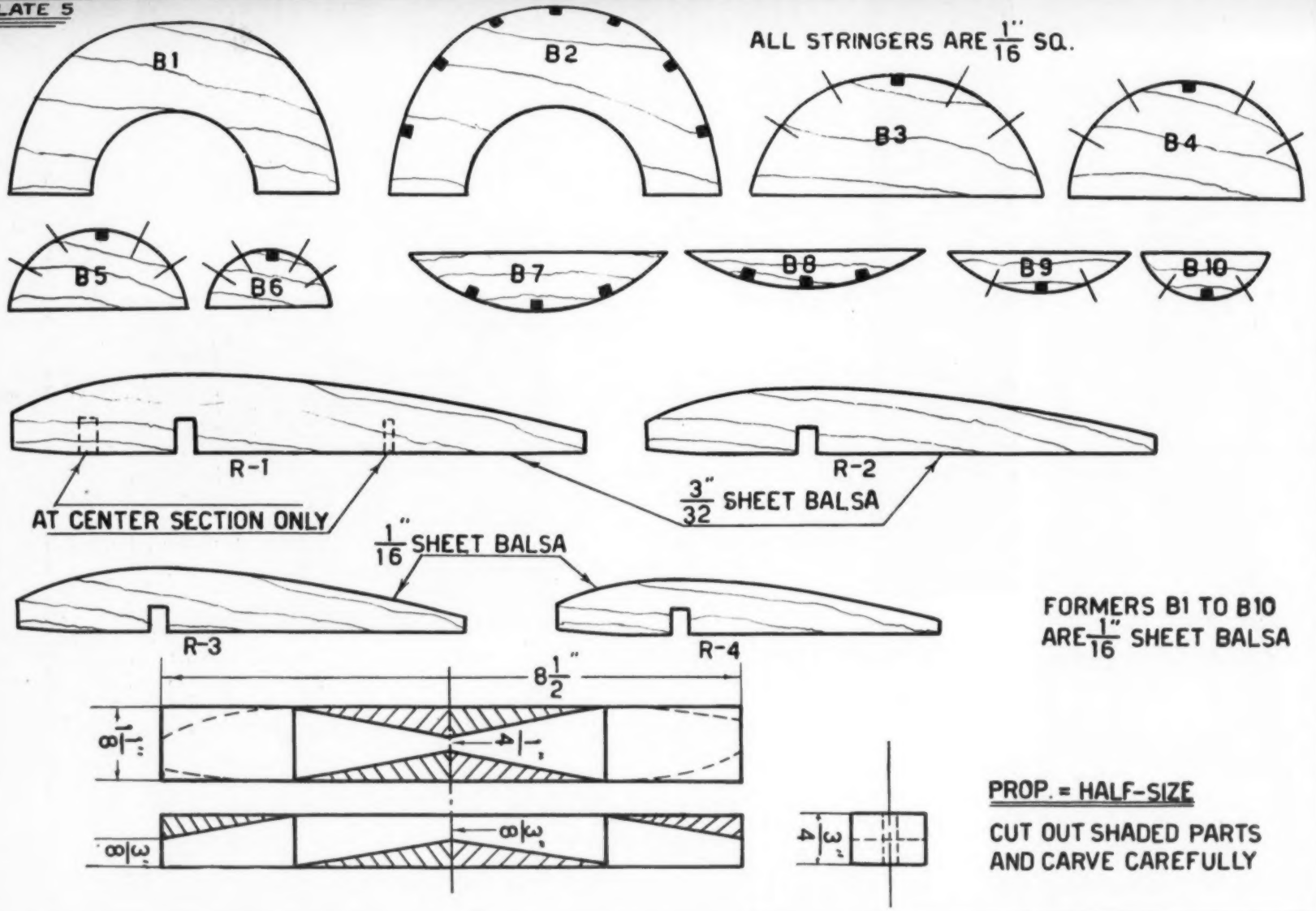


PLATE 4
L.E. 1/4" SQ. TAPER TO 1/8" SQ.
R1
R2
R3
R4
R5
R6
1/8" X 1/4" TAPER TO 1/8" SQ.
OFFSET RIB 1/8" TOWARD TIP
DIHEDRAL 2 1/4"
5/32" X 1/2" TAPER TO 3/32" X 3/16"
1/8" SHEET BALSA
1/16" SQ.
1/16" X 1/8"
1/16" SHEET BALSA
R-6
STABILIZER

STABILIZER

PLATE 5



The North American B-25, a powerful addition to the U.S. Army Air Corps' striking power

FLASH-NEWS

Special To Model Airplane News:

NAVY—Scheduled for delivery to naval aviation during 1941 are 1582 new training planes and 2417 new combat planes. In addition, the navy plans to have its training program rolling to the tune of 1,000 new pilots per month by the middle of this summer. Approximately 75% of the new students will be passed, it was reported.

As an anti-climax to the miraculous landing of the giant Consolidated PBY-5 on the tiny pond in Texas reported in Flash News last month: the huge Douglas R2D-1 navy transport carrying the injured airmen, who leapt from the ship before its amazing landing, crashed into a Southern California mountainside while carrying a total of 11 officers and men on the return trip to North Island Naval Air Station in San Diego. "Their numbers were simply up, that's all!" was the consensus of opinion of naval men after reading accounts of the airmen's daring escape from death over Texas, only to be killed a few days later.

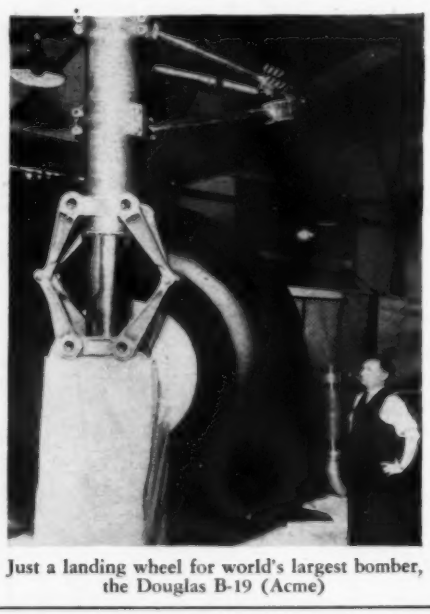
President Roosevelt has signed a bill authorizing spending of three hundred million dollars for installation of additional anti-aircraft batteries on cruisers, destroyers and battleships. This is the result of heavy damage by German air bombs on British warships.

Captain John S. McCain has been named commander of the aircraft scouting force. In addition to his new rank as rear admiral, he will command the United States Fleet combat wing. These groups are cruiser and battleship stationed scout-observation-bomber catapult launched seaplanes.

The navy's newest blimp, the L-2, has successfully completed its test flights at the Akron site of the Goodyear Zeppelin Company. The L-2 is the first of a contract for two small training ships and four large patrol blimps. Captain C. E. Rosendahl has chosen sites in New England and Central California for construction of new blimp bases.

The Coast Guard's new Consolidated PBY-5 is having a new bombing rack constructed in its underside aft of the rear step for installation of one of the most remarkable aerial cameras ever designed. Fitted with nine lens, the giant camera can photograph an area of 300 square miles from 21,000 feet altitude. Equipped with special filters, the 31-inch-tall camera can cover 790 square miles. It weighs 750 pounds and will be used for Coast and Geodetic Survey work.

ARMY—An enviable record was shattered recently when a Big Boeing B-17B "Flying Fortress" four-motored heavy bomber crashed into a boulder-strewn slope in California's San Bernadino National Forest. The ship was only a charred remnant and its six occupants were burned beyond recognition. The dead were First Lieut. J. H. Turney, a pioneer on the type, First Lieut. D. T. Ward, First Lieut. Vernon MacCauley, Sergeant T. F. Sweet, Corp. F. J. Jirak and Private J. C. Sessions. The ship belonged to the 93rd Bombardment Squadron of the 19th Bombardment Group of the First Wing, G.H.Q. Air Force which, oddly enough, won the coveted Daedalian Trophy last year for safe flying.



Just a landing wheel for world's largest bomber, the Douglas B-19 (Acme)

A ski-equipped attack-plane, flown by First Lieutenant Walter Arntzen of Selfridge Field, landed on an ice flow in Green Bay on Lake Michigan and rescued two marooned fishermen. After taking off from the floating ice pack, Arntzen made light of his feat saying: "After all the floe was two miles long and nearly a mile wide!"

Walter Reuther, author of the 500-planes-per-day plan being backed by the National Defense Advisory Commission, has been assigned a special Douglas C-39 army transport plane to fly him about the country on a survey trip of aircraft plants.

The Distinguished Flying Cross has been awarded 2nd Lieut. W. W. Lazarus and Sergt. T. F. O'Malley for their coolness and courage when the engines of their army transport suddenly stopped during a flight from San Juan to the Virgin Islands. Lazarus calmly ordered four officers and his crew chief to jump to safety after which he and O'Malley rode the ship into safe landing with only slight damage to the plane itself.

The Ford Motor Company has been awarded a $122,323,020 contract for construction of airplane engines. The type and horsepower were not announced.

A full "target squadron" of 13 radio-controlled robot planes has arrived in Hono-

CORRECTIONS & INSERTS—MODEL AIRPLANE ENGINE DIRECTORY FOR 1941—FEBRUARY, 1941 ISSUE.

NAME	CLASS	WEIGHT IN OZ. BARE	WEIGHT IN OZ. FLYING	DISPLACEMENT IN CUBIC INCHES	BORE	STROKE	CYCLE	PORTS	RATED H.P.	R.P.M. MIN-MAX	FUEL GAS WHITE	PARTS OIL SAE-70	PROPELLOR DIA.	PROPELLOR PITCH	TYPE OF MOUNT	TYPE OF GAS FEED	MINIMUM WEIGHT OF PLANE IN OZ.
CYCLONE "BABY"	C	6.5	20	.363	12/16	13/16	2	R. VAL.	1/5	500-5500	3	1	12.75	8	BEAM	GRAVITY	29.00
CYCLONE "SUPER"	C	7.25	20	.647	15/16	15/16	2	R. VAL.	1/4	1000-7300	3	1	13-14	6-8	BEAM	SUCTION	51.80

lulu and will be in operation before next summer, it was announced by Major General Frederick Martin, Commandant of vast Wheeler Field. The ships, tricycle-equipped Consolidated PT-3A's, will be used for anti-aircraft tow-target firing and it is believed they may be of use for more than a year.

What's your chances of becoming a U. S. Air Corps flier AFTER entering an air corps primary training school? Every chance in the world, you say? Not on your life, for the Cal-Aero Detachment at Glendale has been recorded as the highest ranking school in the nation for the past year with a rating of 64.4% successful completion of training. The national average for U. S. Air Corps Training Centers is only 57%, or just little more than 50-50!

Twenty-seven Boeing B-17 Flying Fortress quadri-motored bombers were involved in a mass flight from March Field, Riverside, California to Bolling Field, Washington, D. C., in connection with the historic third inauguration of President Franklin D. Roosevelt, Commander-in-Chief of the U. S. Army Air Corps. The trip was scheduled as a training flight with various maneuvers and tactics employed in the return flight.

The latest Flying Fortress, the streamlined Boeing B-17C, with high altitude engines, flush gun turrets and aerodynamic refinements, is now in the hands of Wright Field test officers where it is being put through a rigorous schedule of long-distance sub-stratosphere tests. The mysterious Norden bomb sight is installed and tests are being simultaneously conducted on this device.

AIRLINE—Only a mile from safety, TWA's sleek "Sky Sleeper" was destroyed in a crash near the Lambert-St. Louis Airport. With 12 passengers and a full crew aboard, the ship, far behind schedule, passed over the airport and was taking a swing preparatory to landing when there was a report, a flash and the ship hurtled into a farm house. Captain P. T. W. Scott, TWA veteran, and J. F. Mott, a TWA employee riding as a passenger, were killed and 12 passengers were seriously injured. It was the airline's first crash in 614,269,533 passenger-miles!

At a cost of more than one hundred thousand dollars, United Airlines is providing new static-free ultra high frequency radio "highways" by immediately installing 100 special radio receivers in its fleet of transports. Coming as a result of the crash of a "Mainliner" near Salt Lake City recently, this new move is expected to improve safety by 19%.

A new type, "bomb-proof" resilient pavement has been developed for runways, it was reported by J. R. Keane, president of Western Asphalt Association. "Bombs falling on this type runway would rip open only a small seam repairable in little more than an hour, and ships could be used on the remainder of the runway even during this repair work."

No more air races at Cleveland—this time final and authoritative! So states Major General John Berry, U. S. Air Corps Airport Commissioner, as work starts on Cleveland's new $8,400,000 aviation research laboratory. Although Cleveland Airport is one of the largest in the world, construction work on the laboratory and increased air traffic at the field during test work makes any racing, crowd and plane-gathering event an impossibility. The research laboratory, finest in the world, will have four wind tunnels, one of which will attain the equivalent of 300 miles per hour and 30,000 feet altitude for test purposes.

Two transport planes were destroyed and two men badly burned in a fast-moving fire which swept through United Airlines' Salt Lake City hanger. The fire started when a welding machine ignited gasoline fumes. A Douglas DC-3 and Boeing 247 twin engine transports went up in the smoke of the $165,000 blaze.

Heavy snow disrupted air traffic recently at New York City's LaGuardia Airport for more than two days.

THE INDUSTRY: DOUGLAS was the center of much speculation when Edsel Ford, President of the billion dollar, 120,-000-men Ford Motor Company, visited the expansive Santa Monica main division of the aircraft concern and conferred with President Donald Douglas. No positive results of the conference have been forthcoming but the possibility Ford may build large numbers of fast, potent Douglas DB-7 attack-bombers loomed large in aviation circles. The company itself has been moving swiftly towards higher production output with the installation of roller-tracked assembly conveyors for DB-7B fuselages. Moved at frequent intervals along the long metal rail, the fuselages near completion when they join the wing assembly line and emerge as finished airplanes. The company let sub-contracts in the amount of $100,-000,000 with middle-west and eastern automotive and aircraft firms to manufacture wing sections, tail surfaces and other large sub-assemblies.

The Douglas Oil and Refining Company, a new subsidiary of the huge Douglas aircraft concern, has begun construction on a refinery for the production of 83 and 100 octane aviation gasoline. Upon completion it is expected the plant will have a capacity of 10,000 barrels daily. A threatened shortage of this fuel, together with increased company needs for flight test of company airplanes, were given as reasons for its erection.

RYAN will add 240,000 square feet of floor space, at a cost of $350,000, to its recently enlarged San Diego facilities. "This is a company financed and contracted expansion," President T. Claude Ryan stated, "and is in no way being backed by the government, although we are at present working on a backlog of $11,000,000 worth of U. S. Army and Navy training planes." The new ST-3 model is a redesigned model of the popular ST training model equipped with a Kinner five-cylinder radial air-cooled engine and sweepback wings. A large number has been delivered to the air corps with more on order.

HOWARD has introduced a new low-wing training plane. Known as the DGA-125, it is the latest of famed-Benny Howard's creations and is intended for the civilian pilot training program's secondary and instructor courses.

NORTH AMERICAN, after paying a huge Christmas bonus to its employees, has announced a plan whereby General Motors will build parts and sub-assemblies for the sleek B-25 high-speed attack-bomber. It gained further recognition recently by being the first aircraft factory to introduce ice hockey team play . . . and in sunny Southern California!

CONSOLIDATED has contracted with the Federal Government to lease a $14,-446,929 parts factory to be erected a mile from the present San Diego plant. In addition, $3,090,000 will be expended on enlarging the thrice-enlarged main plant. Edsel Ford has agreed to produce sub-assemblies for the giant B-24 four-motored bomber under construction for the United States Army Air Corps and the Royal Air Force, in which service it is known as the "Liberator." A new plant in Dallas is now under construction, as recently reported in FLASH NEWS.

NORTHROP has announced plans for further plant expansion of $1,000,000, which will give the fast-growing company a total of over 500,000 square feet floor space. The contract for Norwegian attack-seaplane bombers is nearing completion and a new project will soon be announced.

HUGHES has announced plans for the erection of an integrated factory on a 300-acre tract in Inglewood, California. It may surprise some to learn that Hughes Aircraft Company has been an incorporated business since 1935 and is at present a fairly large concern. Work, until now, has been concentrated on experimental process and research engineering but will soon be in production on a plastic military plane.

LOCKHEED's new VEGA plant has begun operation on the recently purchased Union Air Terminal. The plant is working on large-scale production of the Vega 35 training plane (purchased from North American). Lockheed is rushing to completion the first "Ventura" bomber, a Royal Air Force version of the Lodestar transport. The new Ventura is larger, faster and more heavily armed than the tough "Hudson" bomber which has gained such an enviable reputation with the Fleet Air Arm of the Royal Air Force.

LUSCOMBE is planning a new plant at Corsicana, Texas, near the state capitol at Austin.

FREEMAN aircraft is a new firm beginning erection of a plant in Santa Monica. Headed by Ronald A. Freeman, formerly experimental chief with Barkley-Grow Aircraft, the new company will manufacture a 325 m.p.h. tricycle, twin-engine U. S. Navy Scout-bomber and production on 5,000 at the rate of a ship-a-day is expected to be under way soon.

MARTIN has contracted with the Chrysler Corporation to build spare parts and sub assemblies for the new Martin B-26 Bomber (MODEL AIRPLANE NEWS, March, 1941 issue).

BREWSTER has announced plans for construction of a five million dollar plant at Hatboro, Pennsylvania which will be used in addition to its present extensive facilities at the now defunct Newark Airport. The "Buffalo," single-seater fighter, is at present in production for the Royal Air Force.

PERSONALITIES—One of the strangest stories of the war is that of Koene D. Parmentier, Chief Pilot for K.L.M., participant in the famed MacRobertson Lon-

(Continued on page 60)

The Aeroneer Takes Flight

(Continued from page 27)

tip, to form the dihedral, which is 2-1/4" at the tips. If this doesn't give the desired amount of dihedral, simply increase the offset. Wing tips are cut from 1/8" sheet balsa and glued in place, then rounded with sandpaper. Glue ribs R-1 to R-6 in place. After this is dry remove the wing frame and put it aside.

Landing Gear

The landing gear is shown on plate 2. The main strut and pant-cut-out is cut from 5/16" sheet balsa, the pant cover is 1/8" sheet balsa. Be sure to make one left and one right. The pant-cut-out is cemented to the main strut and the pant cover is in turn cemented to pant-cut-out. A small fillet (3/16" square) is placed over the pant-cut-out, the whole unit streamlined as neatly as possible. The slot in the main landing strut is to accommodate the first 1/4" x 1/8" spar in the center section. The landing strut is glued to this spar, the rib and leading edge. Use plenty of glue and make sure alignment is accurate. Set aside to dry.

Motor

The propeller is carved from balsa block 3/4" x 1-1/8" x 8-1/2". The other dimensions may be obtained by doubling those on plate 5. Finish smoothly. The propeller spinner is turned from a 3/4" square x 7/8" block. A slot is cut out of the spinner to accommodate the hub. Don't glue on the spinner until the shaft is attached. The motive power is obtained from six to eight strands of 1/8" flat brown rubber.

Covering and Assembling

Covering is one of the things that has to be done neatly in order to obtain a sleek-looking model. So take your time and you will be well repaid by praise always accompanying a well-covered job. Covering can best be done in many sections. The builder may use his own discretion as to the color scheme of his model; the original model was light blue and-yellow. After the whole ship is covered, spray lightly with water; first pinning down the surfaces to prevent warping. When the paper is dry give two coats of clear dope, again pinning down the surfaces. The cabin is covered with three pieces of thin celluloid, using glue as adhesive.

For flying purposes don't use colored-pigment dope, on the wood parts, a few coats of clear dope sanded between coats will suffice. The rudder and stabilizer are glued to the body, paper being slit over the rear block to take the stabilizer. The propeller shaft is bent from .034 music wire and is mounted by pushing it through the bearing block (slipping on a few washers), through the propeller, bent back and pushed back into the propeller and glued (plate 1). The spinner may now be attached. The rubber motor is put into the body and looped around the shaft. One-inch-diameter celluloid or wood wheels are slipped into the pants. The axles are .034 steel wire cut to size and glued in place. The wheels must spin freely. The wing panels are glued securely to the center section. Check the dihedral.

The plane is now ready for a test flight.

Flying

The model should balance at the tip of the spar; if it doesn't, add weight to the tail or nose. Test the glide in a grassy field; it should be flat and fast. Adjust by warping the stabilizer up or down as the occasion demands. Now wind about 75 times and launch. The model should get away to a long, low climb, circling to the left a bit. After the power is exhausted it should "come in" in a fast, flat glide. If this doesn't happen adjust the ship 'til it does. After the correct adjustments have been found, wind about 50 to 60 turns with a 4 to 1 winder. Put 'er down, and let 'er go!

If the builder has any trouble with adjustments, write the author in care of this magazine, enclosing a self-addressed, stamped envelope. We will try to aid you with your problem. Good luck!!

Frontiers

(Continued from page 21)

some corn (as they do in Nebraska), but must depend on regular arrivals of supply ships.

All this sums up to the fact that airplanes will be needed to act as "stand-ins" for the boats and provide supplies of necessity. This task will be a big one and will mean operation of large transports from points in Africa or the United States. It would be impossible to expect the airplane to replace over-sea commerce, but it could supply things of immediate need while the steamships played "cat and mouse" with Herr U-Boat. The airplanes would have to be large with long cruising range, which means a stupendous undertaking if these were to be built in quantity. However, planes of this caliber appear highly important in keeping the life-line to Britain open; as vitally important as fighting planes now being delivered to that country. For, without the life-line intact, Great Britain would not be able to operate her war-machine in very effective fashion. She now has enough aircraft to protect herself against invasion, but to preserve her independence it is readily apparent that she will have to attack sooner or later. Otherwise the enemy will grow stronger. And in order to wage an effective attack against the enemy, operations behind the lines must be systematic and efficient and in this instance the use of large cargo planes would be a major item; not only to supply food to civilians and fighting men alike, but supply necessary military equipment, such as small guns, airplane engines and spare parts. If Germany was attacked, the country would go "all out" with her U-boats to stop British shipping and snuff out the heart of Great Britain. But efforts to stop high-speed air transports might not be as effective.

England has a great many varieties of warplanes on the action frontier and will soon have many more. Most of these high-performance fighting ships are very temperamental and require expert

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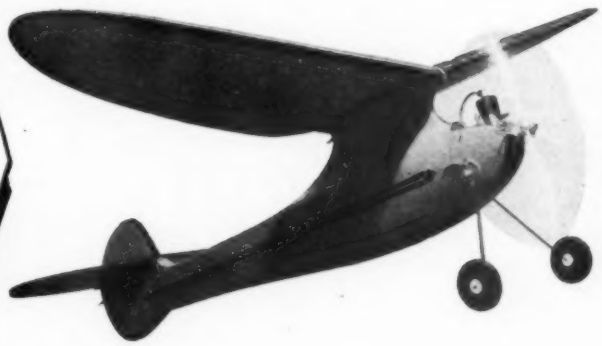

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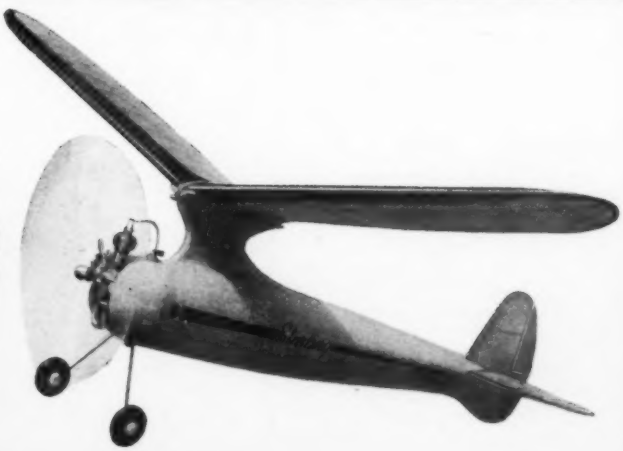

care and ever-frequent parts replacement. Bullets may pierce oil coolers, fuel and oil lines may burst, hydraulic systems may malfunction and a thousand other troubles may pop up, all different and requiring immediate attention, before the airplane can be flown again. Storing spare parts, half of which would be of foreign manufacture, to supply needs of various types throughout scattered parts of the British Isles, as well as Britain's other points of operations, would be an almost impossible task. Long-range aircraft could supply these necessities in one or two days whereas the fighting plane would probably be grounded for months on end if the steamship were relied upon. This fact alone might mean the winning or losing of the war.

The long-range transport would also be a means of carrying returning pilots back to their base after ferrying bombers across the Atlantic. Then, Canadian pursuit pilots must have rapid means of getting to the battle-front, and via air it would be much safer than putting such skilled personnel on one vulnerable steamship. As a troop carrier alone the large transport has merit. Grover Loening, the noted aviation pioneer, commented in New York upon the fact that if 1,000 Douglas B-19 bombers were built, they could transport over 100,000 troops to Brazil, non-stop in a single day; 125 men with full equipment could be transported on each in a total elapsed time of 15 hours! Many people will state that hopes of building a thousand B-19's is too optimistic, hinging on the ridiculous; especially when the first one has not even flown after several years in the making. These are different times, though, and it might be pointed out that the U. S. Army Air Corps placed orders for over 2,000 medium-bombers before the first design was completed. Even production of the huge four-engined B-17 and B-24 bombers will number into the thousands before many a year has passed, and the B-19 is not too great a step forward in development of large aircraft. We might not foster immediate construction of a thousand such things, but they should be built in large numbers so that the Allied war machine may have right "lubricating oil."

Our experiences with large aircraft, which began with the Sikorsky S-40 and S-42, then Boeing and Martin Clippers, B-15 of Boeing's, Douglas's DC-4, Consolidated's B-24, Boeing's B-17, Sikorsky and Consolidated Navy jobs, and now the Douglas B-19, a giant Martin flyingboat and perhaps a new big one from Boeing for the navy, should make us "chief potentate" of the big-plane building clan. With a world of experience in operating these aircraft as well as building them . . . well, what are we waiting for?

May we then propose that the government designate one company to build a huge plant for the sole purpose of building one type of huge, long-range cargo transport, that may be produced on production basis?

The main problem is where to "draw the line" as to size, taking into consideration financial, operations and production angles. We have conjectured several times in these pages as to details of future air giants and since then airplane engineering has advanced so rapidly that a detailed thesis at this time would become somewhat involved . . . and voluminous indeed! It might be said that new aircraft construction and development of a market to use them have not kept up with increased knowledge gained in aircraft design. The field is wide open. The aeronautical engineer knows that he now can design almost anything, to the extent of building wings on one of our large ocean liners. That certainly covers a lot of ground, and with such opportunities for progressive action it is no wonder that this era of aviation is so interesting. But the opinions are so varied on what the next giant airplane should be like that we will turn the tables here and ask your ideas on the matter. Write in and let us know your opinion on how a trans-oceanic airplane should be designed. Send us sketches . . . anything . . . to convey your ideas. We will compile and publish them in these pages, giving due credit.

Here is a good chance for you future aeronautical engineers to make full use of your knowledge and originality in the design of an airliner. Should the trans-oceanic airplane be a landplane or seaplane? What length wingspread should it entail? (Douglas's B-19 will measure 212 feet from tip to tip.) What airfoil should be used . . . the efficient NACA 23012, a symmetrical airfoil or the Davis wing? Might not Fowler flaps be employed or a flap of your own design? There is still room for flap development on these huge ships; we have just scratched the surface in this category. The wings would be so large that almost any "slit-slot-slat" combination might be contrived. Wing loading would also be an important item, especially at this time when engineers have reached the 45 lb./sq. in. mark and are considering 6[illegible] pounds in the near future. Now that the "impossible" 10 or 11 aspect ratio has been reached what will the next giants have? The displacement of load within the wing is also important, as well as the bullet-proofing of integral fuel and oil compartments and gun stations. There would be the probability of attack while enroute and the installation of gun turrets would be of importance. Guns on our new bombers soon to appear will be remotely controlled from a lookout station in the central part of the plane. These ships would also be of more import if they could be readily adaptable for bombing or long-range patrol work.

The engines would, in themselves, make an interesting subject. There will soon be a great variety of types available for these airplanes, all the way up to what is said to be a 42-cylinder power-plant being fabricated by Wright. Should they be in-a-wing engines, air-cooled or otherwise and of what horsepower? Pratt & Whitney is said to be working on the sleeve-valve type while many new engine manufacturers are in the offing. The type propeller they will turn may also vary considerably from three blades to six, counter-rotating or reversible.

HARDWARE Specialist

Contest conscious? Fly Ohlssons and gather in some of the tinware (and folding stuff) yourself. Don't envy the champions this year—be one.

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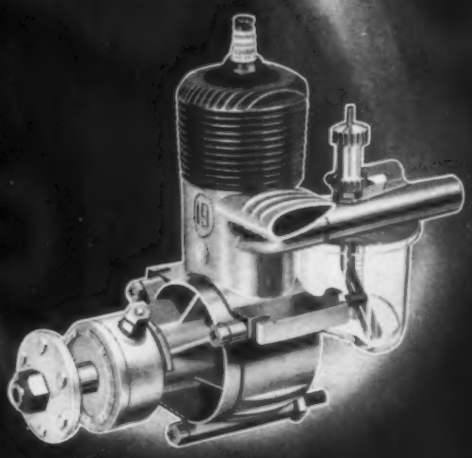

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Wide-pitched blades would be needed for sub-stratosphere flight. High altitude flying would also require pressurized cabins and de-icing facilities. It may be necessary to employ hydraulic or electrical boosters to move the surface controls in so large a plane. Might it not be possible for these airplanes to carry tanks or other heavy military equipment with novel features provided for loading and unloading the cargo?

Thus are some hints on what the designer should consider in creating such an airplane, so send in your ideas on the matter, just for the sole purpose of discovering what readers of "Frontiers of Aviation" think on this subject. Please do not send valuable possessions as MODEL AIRPLANE NEWS cannot return any contributions received; we would just like to know your thoughts on what a long-range air transport should be like: one which could be built in the immediate future and in large numbers for practical use.

North American Aviation is building a plant in Kansas City, Consolidated in Tulsa and Martin in Omaha. Each will employ about 15,000 men and is an astounding example of progress being made in aircraft production. All three plants will be used for building bombers and though North American and Martin will now build twin-engined ships, plants are being laid out in order that four-engined bomber production may be carried on in volume at a later date. North American's plant in Dallas is practically completed, with most of the personnel hired already! It is contemplated 50 four-engined bombers will be built monthly in the Consolidated plant. North American has stated that it will build an advanced version of its B-25 at Kansas City. So . . . Curtiss-Wright officials, with very many factories already in its possession, say, "let's not be pikers" and build new plants at Buffalo, St. Louis, Columbus, Cincinnati and Caldwell, N. J., and begin 60 fighting ships and 2,000 engines a day just to start the ball rolling!

Jet propulsion is the topic of the day! Martin has been experimenting with it on its B-26 bomber. Lockheed has also been giving the idea considerable consideration and contemplates employing the principle on the forthcoming Excalibur transport, which would boost the speed 20 to 25 m.p.h. The idea is to utilize the exhaust output for additional power. Great Britain is ahead of us in this instance, as her Spitfires have already been going through experimentation with jet propulsion. As usual, activities are secret with no immediate hope of anyone determining the true value of jet propulsion or just how it is accomplished.

We have heard a lot but have seen nothing of Brewster building a new bomber. Is it true? When the French aircraft carrier "Bearn" unloaded its cargo of planes at Martinique during the downfall of France a couple of Brewster fighters were aboard. There were also a few Curtiss low-wing fighters, but the majority of planes were Curtiss SB3C-type biplanes turned over by the U. S. Navy.

Gas Lines

(Continued from page 25)

tached with springs to an ordinary landing gear. The springs are soldered to the axle and the metal on the skiis in a way which enables them to be tested and yet retain correct attitude for flying and landing.

Vernon F. Jones of Thawville, Ill. sends us picture No. 5, showing two of his gas jobs, both of which are powered with Baby Cyclone motors. The ship with No. 13 on the fuselage is about three years old and a veteran of many flights. It has a span of 5 ft. The army job has a 6 ft. span but is only a year old. Apparently one grew up faster than the other!

Jones says they are not built to win contests, but just for good steady sport-flying. This verifies there are many fellows in the country who are not "contest crazy."

Model No. 13, on one occasion, was lost for two minutes as a result of no timer and an over-supply of gas. Jones has been building models as a hobby since 1927, so he certainly can be classed as "one of the old timers." As a parting suggestion he wishes to know why contests are not held for scale gas jobs. We think this is possibly a good idea and would like to print remarks from other modelers concerning it.

Apparently the present gas rules encourage building of all types of planes, which was the intent prompting them; for picture No. 6 shows John Svenson of Ontario, Calif., a member of the D.A.V. Gas Model Assn. of Pomona, with his 9 ft.-span Ohlsson-powered craft. He says it is a beautiful flier and has an exceptionally fast climb with ensuing flat glide. The ship now is being equipped with a camera that will take pictures through an opening in the fuselage between the landing gearstruts.

CLUB NEWS

Alabama

Jacque Houser of 55 Semmes Avenue, Mobile, Academy Contest Director for the state, sends us news of a recent contest. He says:

"Here is a somewhat belated report and picture pertaining to our Gulf Coast Model Championships staged here Dec. 15. Originally scheduled for Dec. 1, bad weather and worse predictions by the weatherman necessitated postponing the meet until above-mentioned date. Because of these many postponements the field of contestants was much smaller than originally anticipated, but the representation was wide; Louisiana, Mississippi, Florida and Alabama.

"In the gas event it was New Orleans all the way: Boys from the Crescent City captured first, second, third, fifth, sixth and seventh places. And when one considers that there were only six flying from N. O. it is seen they did pretty good. J. R. Cooper of Mobile 'sneaked one over' on them and placed fourth, preventing their making a clean sweep.

"In the rubber powered events the Mobile group did much better; winning first, second and third in the Open-Senior class, and first and third in the Junior class.

"Times as a whole were low; the few long flights were made by those smart, or lucky, enough to take advantage of the occasional bits of sunshine we enjoyed. Only

a few times did the clouds break, letting the sun through. Each time it did the wind died down, permitting much better flights.

"In spite of the small turn-out of both spectators and contestants the meet was judged a success and at present plans are under way for a much larger get-together next summer. Among other prizes two expense paid trips to the Nationals will be offered.

"Total (in seconds) times of the winners were:

"Gas: Melvin Jung, 452; Jack Thames, 349.4; J. A. Cochrane, 320. Junior Rubber: Wallace Johnson, 243.5; Pat Ryan, 217; Tommy Carlin, 183. Senior-Open Rubber: Frank Munger, 272; R. D. Houser, 270; R. E. Smallwood, 183."

Picture No. 7 shows contest sponsors and the trophies given as awards. From left to right they are: C. F. E. Munger, president Mobile Model Aero Club; Jacque Houser, secy.-treas.; Donald Smith Jr., representative Smith's Bakery, meet sponsor and J. R. Cooper, vice-pres. M.M.A.C.

Florida

Picture No. 8 gives some idea of enthusiasm and activity among Miami's modelers. Approximately 200 planes were entered in a recent contest, keeping the air buzzing with their tiny motors and shimmering wings. There was the usual number of crack-ups and a number of planes were lost. First prize of $100 was taken by 30-year-old George Reynolds of Jacksonville. Additional prizes of more than $200 went to other winners. It was one of the South's most important model airplane contests.

Picture No. 9 shows our old friend, Edward Soltis of 57 Morningside Avenue, Yonkers, N.Y. with a fleet of models he has constructed. Edward makes a profession of building up kits for various companies who have calls for completely-assembled display models. Edward will be pleased to hear from other model builders.

One of the most realistic scale planes received this month is shown in picture No. 10. It is a 42-in. Westland "Lysander" built by Bob Deats of Laredo, Texas. It required sixty hours to complete.

New Jersey

We hear from Lucien Auletto, secretary of the "Jersey Mosquitoes." He says that this club of fifteen members has finished a very successful year. Apparently hardships only make better model builders, rather than deter these young fliers; for Lucien says:

"We test our ships in the city itself on a big bulkhead (filled-in ground) about five blocks square. On three sides is Newark Bay and on the other, Bayonne; so that if the model misses the trolley wires it is sure to circle and go into the bay. (Everybody is an expert swimmer.)"

We would say that this club would be particularly adept at building amphibians. Why not? Then the ship could take off from a field and land, without damage, in the water. Much can be said for the swimming ability of these fellows, for to date, since 1937, only three gas models have been lost in the bay. Lucien says the club is thinking of awarding a prize to the fellow having the hardest luck during the year; that is, in connection with crack-ups or loss of models. Last year the club members who made highest times were:

Class C, Lucien Auletto, 7 min.; Class B, Edward Milisky, 4 min. 3 sec.; Class A, Robert White, 1 min. 50 sec. These winners received trophies donated by the American Legion Post No. 165.

More power to the American Legion... We would like to see other posts follow the example of No. 165!

The club plans to hold a large indoor scale contest at the Jersey City Armory in March. For more information write Lucien Auletto, 93 W. 24 Street, Bayonne.

Wisconsin

James R. Custin of 2720 N. Palmer Street, Milwaukee, sends an interesting report: He says at the Second Annual Wisconsin State Model Airplane Conference, attended by 41 delegates representing clubs from all parts of the state, some pertinent suggestions were made. Mr. Lawrence Halpenny, Boy Scout executive and member of the Milwaukee Model Aviation Council, pointed out radio stations are required by law to give a certain amount of free time to matters of public interest and that model organizations, if they present their story appropriately, can certainly avail themselves of this service. Mr. Halpenny also said local Boy Scout leaders, clergymen, school teachers and principals, if properly approached, are often willing to lend their aid to model aviation groups.

We feel model builders in other parts of the country may benefit from these suggestions.

An interesting outcome of the Conference was that it unanimously voted for a resolution stating it favored a change in the date of the Nationals to the first week in August, in order to allow good flying weather for running of state and local elimination meets prior to the national contest. Another resolution the Conference favored was inclusion of original design events in as many gasmodel meets as is practical. A judging scale, submitted by James R. Custin, was provided for these events. If successful, it will be recommended for nation-wide adoption.

Arkansas

John Deden of 410 Towson Avenue, Fort Smith, writes that a new club has just been started in Fort Smith and it intends holding at least one monthly contest during the coming season. There will be an entry fee of 25c to help defray expenses.

New York

Kenneth J. Kapus of 91-26 213 Street, Queens Village, secretary-treasurer of the Queens Aero Club, writes:

"The Queens Aero Club wishes to announce its annual contest to be held August 10, 1941. The place to be announced at a later date; however, we expect to hold the contest around Creedmore, L.I. We are to have A.M.A. sanction which will make all records official.

"The Club members always fly every Sunday, during the Winter as well as in the Summer. Every two weeks we hold a cash prize contest; the other two weeks of the month we hold a trophy contest. Our first prize is always over $10; the other four are also large. The trophy contest

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Initial production of this famous motor was ready for immediate delivery on February 15th. Although we anticipate that all orders will be promptly filled, the possibility exists that the demand might exceed the supply, due to the nature of this offer and the fact that for the first time in Junior Motors Corporation history this world-renowned motor has been offered for sale at less than $21.50. We suggest that you place your order immediately. Orders will be filled in rotation.

Get yourself a "B" and hop on the bandwagon.

Yes sir! When we introduced the Model B at the new low price last month, we knew things would begin to hum. There's no motor in the world that has a record to touch our Model B. To date 85,000 of this type have been sold. There's no equal to Model B in engineering, construction, materials, or power. From piston-rod to coil, the reputation of "B" is the best reputation in the miniature gas engine world.

We offer it now at a price all can afford. See your dealer *now.* If there is none in your locality, write to us.

DEALERS:
Write for prices and literature

JUNIOR MOTORS CORPORATION
2545 North Broad Street, Philadelphia

consists of a large perpetual trophy and smaller trophy. The large trophy is given to the member with the highest time for a period of 12 weeks, he holds the trophy until someone else wins it. He then receives a smaller trophy with his name engraved upon it. We have been doing this for a period of nine months and it has worked out very nicely. We are now going to receive leather jackets; the money for these was obtained from the selling of a VMS Gamma and a Brownie motor complete."

West Virginia

Immediately following the West Virginia State Indoor Championship Meet, held at the Field House, Morgantown, on the 12th of January, the West Virginia and Western Pennsylvania Model Officials conferred on policy and meet-dates for the 1941 season. The two state directors of this organization, Mr. Carl Hopkins, State Supervisor of Model Aviation Activities for the Recreation Project of the W.P.A. of West Virginia, as well as W.Va. State Director for the A.M.A. and Harry G. Vogler, the A.M.A. Western Pennsylvania State Director, advocated a centrally located school for the Contest Directors, so that all concerned might better understand just what their tasks are and what model builders desire from these officials. The suggestion met with favor among those present, and it is hoped that the Academy of Model Aeronautics sees fit to sponsor such a group in the immediate future.

Further, contest dates for 1941 were discussed and the Pennsylvania delegation presented copies of its 1941 schedule, requesting the West Virginian group's cooperation by holding these dates open, as well as participating in these meets.

Representing West Virginia were Mr. Carl Hopkins, Mr. Wm. Carduff, W.P.A. Recreation Leader; Mr. John Zan, Morgantown, W.P.A. Recreation Leader and W. E. Short, West Penn Recreation Council of Morgantown. Pennsylvania was represented by Harry G. Vogler Jr.; Mr. H. G. Vogler Sr., Chief Timer, and Director of Publicity for the Allegheny Mountain Area Meets; Mr. V. E. Smith, W.P.A. Recreation Leader, Allegheny County and Meet Official.

Argentina

We have an unusual and interesting letter from D. Y. C. Biancl, president of the Club Argentino De Aeronodelistas "Eduardo Newberry" of Pedro Moran 3562, Buenos Aires. We quite as follows:

"The Argentine aeromodelists Club 'Edward Newberry' lets you know that in the past competition performed by this club under the regulation of the Internacional Aeronautic Federation the aeromodelist MANUEL MERA obtained a record flight of 46 minutes 20 seconds with an average of 16 minutes 5 seconds, which is the most important that has been obtained up to the moment in the Argentine Republic competition.

"It may interest you to know that the model with which this record was obtained has been planned and built by its performer under the regulations of the Wakefield Cup and the International Aeronautic Federation. It is with great pleasure that we send the excellent marks obtained by this young Argentine aeromodelist in the course of the year 1940 of which we give you the following details.

November 1939—Competition organized by the Aerolandia firm.

February 1940 — Argentine championship. F.A.I. Category 2 and obtained the privilege of taking part in the team that went in for the Wakefield cup.

March—Great competition organized by Argentine Aero Club. F.A.I. Category the best flight.

May—Competition organized by the publishing Co. Hobby. Lost model.

September—Competition organized by the Aeromodelists Club of Vicente Lopez. F.A.I. Category 3rd. Free. Category 2nd.

October—Competition organized by the Argentine Aeromodelists Club 'Edward Newberry.' F.A.I. Category, 1° Record 46 minutes 20 seconds.

"We consider the magazine which you direct as one of the most fitted for its importance and diffusion in order to let the aeromodelists of all the world know the importance of this magnificent flight performed by an aeromodel of an Argentine builder."

Canada

Carroll Moon sends us an excerpt from a letter received from "Scotty" Murray, who is now training with the Canadian Royal Air Force. Many will remember Scotty as one of New York's expert model builders; he held the Class C national record for about six months last year, with his scaled-up version of the "Answer," which appeared in MODEL AIRPLANE NEWS. He also held the Class A record with this same type of ship. Aside from that, he was a proxy flier for the South Africa modelers in the 1939 Wakefield competition. To those who wish to write him, his address is: Gordon Murray, R.C.A.F., Debert, Nova Scotia, Canada.

Pennsylvania

Despite cold weather, several out-of-sight flights were made at the Terrible Torkes' (club) Classes A and B Hand-launched Glider Contest, held January 4th at New Hope. The respective winners and their times (in seconds) were:

August Schmidt, Sahaska, Pa., 149; Clarence Wells, New Hope, 138; Kenneth Williamson, New Hope, 137; Les Parsons, Lambertville, N.J., 132; Tom Fresco, Lambertville, 52.

Comments

Deane Haughtelin of Yuma, Arizona, Box 86 wishes to know what is meant by the term, "Center of Lateral Area."

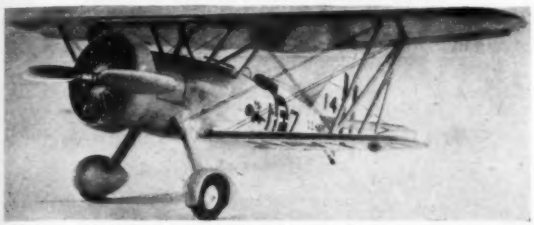
Briefly, this is the center of side area of the model and may be determined as follows: From cardboard, cut out a silhouette

GRUMMAN F3F1
U. S. NAVY SHIPBOARD FIGHTER

32" Span. Length 24". 1" Scale

A fine detailed model with retractable landing gear. 4" turned balsa motor front, 3 oz. silver dope, ½ oz. yellow, 2 oz. glue, etc. All parts printed on balsa, 10" propeller, wheels, rubber motor, full size drawing, and all parts. This fighter plane is used in large numbers on the aircraft carriers. Const. Set complete, postpaid. **$3.75**

CURTISS HAWK F11C4 PURSUIT NAVY



32½" Span. Length 22¾". 1" Scale. Weight 6 oz. Color grey, top wing yellow

THE MOST EXCLUSIVE AND FINEST EQUIPPED MODEL IN THE WORLD. MOVABLE CONTROLS WORK FROM COCKPIT. A special de luxe model, one of the most beautiful ever made. Set contains a 4½" scale Wright Cyclone celluloid motor, detailed push rods, fins, etc., like real motor, 4½" aluminum cowl, 10" steel type carved prop shown, 2¼" wheels, tail wheel, star and rudder insignia and lettering, rubber, windshield, instrument board, flying wires, 4 aluminum step plates, aluminum wing walks, ready cut wheel pants, washers, 3 oz. grey paint, ½ oz. yellow, ½ oz. red, 2 oz. glue, etc. All other parts are printed on balsa wood. 33"x44" scale drawing. Const. set, complete in labeled box, postpaid..... **$4.50**

NEW TAYLORCRAFT SPORTPLANE

36" Span. Length 22". 1" Scale. Weight 2 oz.

COMBINATION LAND AND SEAPLANE SET

A beautiful exact scale flying model with unusual flying range, so light it will rise from land or water in 6 feet. Const. set contains all parts printed on balsa, carved propeller, hardwood wheels, 2 oz. white dope, ½ oz. black, glue, full sized scale drawing, and all parts to build, and parts to make floats. Set p.p. **$1.50**

9-FOOT 1941 TAYLORCRAFT GAS MODEL

9 Foot Span. Length 66". 3" scale

MODEL ¼ SIZE OF REAL PLANE. CAN USE RADIO CONTROL.

One of the easiest gas models to build. Has special wing airfoil for slow landings. Set has ready cut wing ribs, gear struts, nose piece, etc., set of paints, dope, glue, etc. Model weighs 3¾ lbs. without motor, suitable for radio control. Lifts 4 lbs. additional weight. Full size scale drawing. Const. set, postpaid, less wheels and motor..... **$15.00**

Additional equipment if desired:

18" carved propeller	$ 1.50
5 yards silk	2.00
1 pair 4½" M & M Air Wheels	2.75
½ h.p. Forster Gas Motor	20.75
½ h.p. Brown, Jr., Gas Motor, Type B	16.75

GRUMMAN F5F1 SKYROCKET NAVY FIGHTER

24" Span. Length 17". Weight 3 oz.

A beautiful scale model of U. S. Navy's fastest 450 m.p.h. pursuit.

Const. set has all parts printed on balsa, balsa motor fronts, carved 7" props, grey and yellow dope, glue, full size drawing, and all parts. Const. set, postpaid **$2.95**

TAYLORCRAFT MODEL WITH FLOATS ON

CURTISS SO3C1 NAVY SEAPLANE

30" Span. Length 27". Color, silver and yellow

Const. set has all parts printed on balsa, silver, yellow, and black paint, glue, prop, full size drawing, and all parts. Set, postpaid..... **$3.00**

SEVERSKY P35 ARMY PURSUIT

37" Span. Length 25". 1" Scale. Color, silver

Set has 4" turned balsa motor front, 10" carved prop, balsa wheels, tail wheel, rubber, all parts printed on balsa, 2 oz. silver dope, ½ oz. black, 2 oz. glue, etc., insignia, and full size scale drawing. New improved model has retractable landing gear and movable controls from cockpit. Set, postpaid..... **$3.25**

BOEING B-17 FLYING FORTRESS

44" Span. Length 30". Color, silver

Set has all parts printed on balsa, four 2" turned balsa motor fronts, four 4" carved props, celluloid wheels, set of paints, glue, and full size drawing. Set, postpaid..... **$4.50**

De luxe set with 4 aluminum cowls, 4 celluloid motors, 4 metal props, and 2 M & M air wheels. Set, postpaid..... **$6.25**

CURTISS F11C4 SOLID MODEL

10½" Span. Length 7½"

This is a special de luxe solid model. Set has completely finished balsa fuselage, cockpit cut out, routed pants, wings cut to shape, 1½" de luxe cast motor, alum. cowl, 3 bladed cast prop, paints, drawing and all parts. Set p.p..... **$1.50**

CURTISS P36 ARMY PURSUIT

37" Span. 1" Scale. Color, silver

Set has turned motor front, set of paints, glue, all parts printed on balsa, and full size drawing. Set, postpaid..... **$3.25**

Set with 4" celluloid motor and aluminum cowl, postpaid..... **$4.25**

HAWKER HURRICANE PURSUIT

27" Span. ¼" Scale. Dark Grey and Silver

A beauty of the plane now fighting in Europe. All parts printed on balsa, set of colored paints, glue, etc. Full size drawing and all parts. Set, postpaid..... **$2.50**

BOEING F4B4 NAVY FIGHTER

22½" Span. Length 14½". ¾" Scale.

Set has 3" celluloid motor, 3¼" tapered aluminum cowl ring, set of paints, etc. Postpaid..... **$2.95**

NEW CATALOG NO. 6—10c

Beautifully illustrated 7½"x9½" 16 page catalog showing large photos of Army and Navy Fighters, Gas Motors, Gas Models, etc. Includes 2-page catalog supplement. Get yours today. 10c coin.

ORDERING INSTRUCTIONS

Orders sent west of Mississippi, add 15c postage—Foreign, 20c.

MINIATURE AIRCRAFT CORP.

83 LOW TERRACE
STATEN ISLAND, N. Y.

of the model's side-view. Fasten a double thickness of board over parts representing wings and wheels; this is necessary inasmuch as there are two vertical projections for the wings and wheels. Then balance the cardboard sheet on the point of a pencil. The point at which it balances will be the center of lateral area.

Fred J. Hoffee of 7146 Apple St-6, Pittsburgh, Pa. wishes to announce that his Ohlsson "23" No. 7685 has disappeared, vanished or been kidnapped. He will appreciate any assistance modelers can give him to aid in its recovery.

Future Events

March 23	Glider T.L. Stick H.L. Fuselage R.O.G. Gas Powered Open Unlimited (R.O.G.)
April 13th	Glider T.L. Stick H.L. Fuselage R.O.G. Gas Powered Open Unlimited (R.O.G.)
May 19th	Glider T.L. Stick H.L. Fuselage R.O.G. Gas Powered Open Unlimited (R.O.G.)
June 15th	Glider T.L. Stick H.L. Fuselage R.O.G. Gas Powered Open Unlimited (R.O.G.)
June 22nd	Allegheny Mountain Area Hydroplane Meet North Park Lagoon Fuselage R.O.W.: Gas powered R.O.W.
July 20th	Glider T.L. Stick H.L. Fuselage R.O.G. Gas Powered R.O.G. Open Unlimited
August 17th	Glider T.L. Stick H.L. Fuselage R.O.G. Gas Powered R.O.G. Open Unlimited
September 14th	Glider T.L. Stick H.L. Fuselage R.O.G. Gas Powered R.O.G. Open Unlimited
October 5th	Allegheny Mountain Area Model Championships Glider T. L. Stick H.L. Fuselage R.O.G. Gas Powered R.O.G. Open Unlimited

For data and application blanks on any of the above write: Mr. Harry G. Vogler, 1633 Duffield Street, Pittsburgh, Pa.

May 18th — Arkansas State Championship Model Airplane Contest. Full details obtainable from: Texarkana Junior Chamber of Commerce, Texarkana, Arkansas.

Air Youth of America

(Continued from page 20)

Winners: Ed. O'Donnell, 19, 969 Louisiana Ave., Baton Rouge; Jas. Carr, Jr., 17, 141 Bedford Dr., Baton Rouge; Osce Jones, 19, 151 Parker Blvd., Baton Rouge.

Massachusetts

Contest: Jordan-Traveler Junior Aviation League
Winners: John Chulada, 164 Park St., Lawrence; Ralph Brown, 24 Pine Ridge Rd., Arlington; Martin Phillips, 16 Rosedale Ave., Everett.

New York

Contest: New York State Exchange Model Meet
Winners: William Hayes, 18, 2411 Lodi St., Syracuse; Edward J. Swenton, 19, 311 Gifford St., Syracuse; Chas. F. Brennan, 18, 124 Winthrop Road, Syracuse.

Ohio

Contest: Ohio State Model Plane Contest
Winners: Frank Pabian, 3325 Trowbridge St., Cleveland; Macy Hallock, Jr., 125 N. Court St., Medina; Norbert Lisiecki, 9503 Pratt Ave., Cleveland.

Oklahoma

Contest: 1st Annual Oklahoma City Model Airplane
Winners: Bill Skaggs, 14, Tulsa; Don Emmick, 16, Tulsa; Victor Young, 17, 1804 W. Park, Oklahoma City

Pennsylvania

Contest: Fourth Allegheny Mountain Area Model Meet
Winners: Douglas Moran, Irwin; Jos. Scuro, 6628 Apple, Pittsburgh; Henry Thomas, 1240 Wilbur, Akron, Ohio.

South Carolina

Contest: Columbia, S. C., September 1, 1940
Winners: George Hirsch, Jr., Columbia; Henry Harrison, Simpsonville; Bruce Wilkinson, 3217 Oakwood, Columbia.

South Dakota

Contest: South Dakota State Model Airplane Meet
Winners: Vernon Snyder, Sioux Falls; J. Hinstendahl, 410 S. Euclid, Sioux Falls; Renard Fetzer, 507 S. Trento, Sioux Falls.

Michigan

Contest: Eighth Annual State of Michigan Model Aircraft Meet
Winners: Wilfred Bobier, 16, 5734 Haverhill, Detroit; George Sasa, 15, 3123 S. Annabelle, Detroit; Bob Boomer, 20, 3566 Cass, Detroit.

Minnesota

Contest: Annual State-Wide Junior Chamber of Commerce Meet
Winners: Robert Champine, 4352 Nokomis So., Minneapolis; Kenneth Peterson, 1410 Wellesley, St. Paul; Arnold Del Corlo, 1384 Reamy, St. Paul.

Missouri

Contest: Mississippi Valley Meet
Winners: Ed Veselsky, 2917 Keokuk, St. Louis; Stanley Dubowski, 1823 Benton, St. Louis; Vernal Ely, 3430 Texas Avenue, St. Louis.

Nebraska

Contest: Omaha World Herald Midwest Rubber-Powered Model Airplane Contest
Winners: Wm. Turner, 3136 Mason St., Omaha; Joe Mandolfo, 1409 So. 7th St., Omaha; Bill Ruzicka, 118 South 51st Ave., Omaha.

New Jersey

Contest: Second Annual New Jersey State Model Airplane Championship Meet
Winners: Julius Rudy, 15, 71 Jacob St., Newark; Raymond O'Connell, 10, Star St., Iselin; Victor Kordis, 15, 4550 VanKirk St., Philadelphia, Pa.

Texas

Contest: Houston Miniature Aircraft Club State Meet
Winners: Don Judson, Corpus Christi; L. E. Nail, Houston; Bill Garrett, Houston.

Virginia

Contest: VMA State Model Championships
Winners: Henry Lee, 19, 108 LaSalle, Hampton; Dick Everett, 22, Box 215, Hampton; James Weddle, 18, 400 Mountain Ave., S.W., Roanoke.

West Virginia

Contest: West Virginia State Meet
Winners: Ronnie Driver, 17, Wendel; Kenneth Queerman, 19, 132 Hall Street, Clarksburg; Robert Walker, Jr., 13, 875 Lind Street, Wheeling.

Wisconsin

Contest: 2nd Annual "Exchange" Wis. State Model Airplane Meet
Winners: Leonard Baer, 16, 907 E. Dakota St., Milwaukee; Wm. Hammer, 18, Route 5, Box 225 E, Milwaukee; Greg Kohn, 17, 2506 W. Cherry, Milwaukee.

Ontario, Canada

Contest: Model Aircraft League of Ontario
Winners: Jim Templeton, Parkside Drive, Toronto; Cecil McNamara, Toronto; Billy Dilly, 34 Aberdeen Road, Galt, Ontario.

FOR *Duration* FLYING

TIGER aero

"WHY DO I LIKE THE TIGER? POWER TO GET ALTITUDE PLUS THE RELIABILITY THAT WINS CONTESTS!" SAYS JIM WILLIAMS

At duration contests Jim Williams of Los Angeles is a champion among champions. Just completed for this season's flying his new ship exhibits the best elements of design for a fast climb and soaring glide. A Tiger engine is mounted with the thrust line at the center of the round streamlined fuselage. Cowling and spinner fair-in engine base and prop hub. Parasol wing mount elevates the wing to control powerful thrust and torque reactions. Clever use of twin rudders and one wheel is efficient and supports airplane on the ground. This model, five feet in span with 4½ sq. ft. wing area and 36 oz. total weight, is typical of the type and size gas job that consistently wins contests.

FOR *U-Control* FLYING

"HIGH SPEED AND PERFECT U-CONTROL WITH POWERFUL TIGER," SAYS JIM WALKER, INVENTOR OF FIREBALL

Fly your Fireball with a Tiger engine. Become an expert pilot quickly, easily and safely. Learn U-Control flying with the extra help of a reliable engine of adequate power. As you master this new way of controlled flight you can open the throttle and unleash the full power of the Tiger engine. You'll make speed flights and maneuvers possible with no other engine—and all under perfect control. Propellers 10" to 11" are recommended for Tiger powered Fireballs.

TIGER AERO MOTOR $16.50

EXPERTS AGREE . . .

There's a greater demand than ever for Tiger engines. Expert model fliers who use them have only words of praise for this motor and for the best reasons. . . . Tiger engines are scarcely larger than small bore class B motors yet they deliver the full horsepower of a large class C engine. This means you can build or design a regular class C airplane smaller and lighter, install a Tiger to out-climb and outfly the field.

TIGER SERIES ENGINES

BUNCH MOTOR COMPANY

6714 McKINLEY AVENUE — LOS ANGELES, CALIFORNIA

ALSO MANUFACTURERS OF TIGER ENGINES FOR RACE CARS AND SPEED BOATS

Controlled Lightning

(Continued from page 17)

raise the tail up in flying position, pull 'er back and take off exactly as in a real airplane; climbing and diving the ship within a few inches of the ground and pulling her out without stalling or crashing in.

When flying Remote Control you don't have to chase your crate a million miles every flight. You don't need the great wide open spaces. You don't have to worry about thermals, or crashing into trees, buildings, telegraph wires, cars, etc. If you want to go out flying some evening just take a walk over to your nearest school-yard, someone's big lawn, or some nearby lake, hook her up and take off. Fly day or night with small night-flying lights. Even when you have adverse weather, you can fly indoors in your armorry or public hall; just as long as you have ample room for the circling ship. We can truthfully say that almost any ship that will fly free can be adapted for remote control. At the time of this writing we've just completed a new ship which we boast will out-speed any gasoline-powered model airplane in the country! The ship has a wing spread of 34" and is powered with an Ohlsson "60" swinging a 14" prop.

Hydro Remote Control: A low-wing buggy has been rigged up with pontoons; it flies beautifully. When flying this type of model, the operator stands on the shore line, the ship is started from the shore and sent straight out. The ship is given 180° of the 360° to get off before it comes around and flies over land. This is more than enough take-off area; for with the flipper controls, you can almost stall the ship off the water into a 90° climb and level it out. The only thing to watch out for is the engine cutting out over land. We had this happen quite a few times. Our big mistake was pulling back on the stick when trying to lengthen the glide. In every case instead of a better glide, the tail section would drop and slow the ship down and, as a result would drop faster. So if you want to remote-control on water keep this in mind; keep the ship high enough and don't stall. Another thing: don't get the control lines wet; if you do, you'll have loss of control. If you can, try to secure fine flexible wire for control lines, when flying over water, instead of fishing cord.

If any of you modelers have ships that are out-of-date and not quite up to present contest models, you can, within a few hours of work, adapt it with controls; or if you prefer, you can equip the one you now have for controlled flight, and later remove the controls for free flight. We doubt very much, though, if once you've flown your ship with your own hands, controlling its every movement in the air and nursing it down into perfect three-point landings, you'll ever want to go back to free flight.

In order to adapt controls for your own ship, just use, in proportion, the amount of area needed in your ship's controls compared with the size ship described. Metal tabs can be attached to the left wing panel and the rudder, set to bank and turn the ship to the left. The movable elevator can be made the desired thickness, and connected with silk hinges to the present stab. Connect up the rest of your ship in the same manner as shown in the drawings.

The drawings that are submitted are for those who want a real top-notch performer, one which has been tested over a period of months and has all the "bugs" eliminated. The ship was originally copied from the famous Corben Super Ace, redesigned for simplicity and contest work and still have that "look like the real thing." If any of you want a ship that will really perform, for contests or for Remote Control, it's it:

Tail Section

After scaling up the drawings, use a good hard piece of 3/16" square for the bottom stab spar; the leading edge of medium 3/16" x 1/4" stock and the trailing edge, hard 1/4" x 1/2". Top spars for the stab are of 1/8" square. The ribs, shown full size, are of 1/16" sheet. The movable elevator section of 3/16" sheet is hinged to the trailing edge piece with six pieces of doubled silk about 1/2" x 1"; three pieces on each side of the horn. Glue the outer hinges on top the elevator section and on bottom of the stab.

The next two inner hinges: Glue the silk to the bottom of elevator section and to the top of stabilizer section. The two inner hinges are the same as the two outer ones. Inlay the top and bottom between the two center ribs of the stab with 1/16" sheet. The rudder outline is made of 1/8" sheet and ribs of 1/8" squares. Cut in the rudder tab and adjust to full left rudder and cement. The elevator-horn length is optional, the longer the horn the less sensitive the ship's action. On this particular ship the horn is one inch in length.

Fuselage

Start the fuselage construction by first building up the sides. Longerons and up braces are made of hard 1/8" squares. Make both sides, one on top of the other for accuracy. After this frame is thoroughly dry, carefully separate the two sides with a sharp razor. Turn the frames up-side-down over the top view drawings and cement in your cross bracing. When dry remove from the plans and cement on bulkheads, adding necessary longerons and stringers, and install 1/8" diameter wing dowl mounts. The dowls can be braced by adding small triangular pieces of celluloid to the top. Install the 1/16" sheet plywood between top longerons where designated; this plywood platform supports the entire weight of the ship so cement in well.

Drill holes for the two bolts in the plywood one inch apart and 1/4" away from the longeron. The two bolts are put in place with 1/16" inside diameter washers soldered to the head of each bolt. These washers will serve as guides for the single-control wire which leads from the elevator horn. Two small washers are then soldered to the control wire, 1/32" apart, halfway between the two guide washers. After the horn is bolted on the elevator and the entire tail section covered and glued to the fuselage, hold the elevator in neutral position, bend and cut the control wire to fit the elevator horn; being sure elevator is level and the small washers that are soldered to the control wire are half-way between the guide washers, to insure the same amount of up- and down-control on the flippers.

Opposite the two guide washers two eyelets are cemented one inch apart, 1/4" above the longeron, in the sheet wood covering. For control line use two 30-foot lengths of good grade fishing cord with about 15 lb. test-pull. Take two feet of this cord, determine the center and tie the center between the two small washers which are soldered to the control wire. Run each end through the eyelets out of the fuselage. When connecting up the control cords from the joy stick to the ship, run the cords first through the wing cord-guides, then tie them to the permanent cords from the fuselage, being sure the bows (not knots) won't get caught in the guides when either one of the cords is pulled.

Complete the fuselage by planking the entire top section; that is, all the bulkheads, using one continuous sheet covering from the front of the fuselage to the rear of the cockpit. Use soft 1/16" sheet. Inlay hard 1/8" sheet wood in the bottom and side nose sections and install motor mount hooks. Next cut out bulkhead B from 1/16" ply, and glue in place. Cut bulkhead A, bolt in place metal motor mounts and landing gear. Strips of sandpaper are glued to bulkhead B to prevent shimmy of bulkhead A and motor. We offer a suggestion here: Unless you have an exceptionally smooth place from which to take off and land, equip the ship with exceptionally large wheels. We found that 3" wheels enable us to take off and land on grass lawns under full power without nosing over.

Ignition Unit

The ignition unit is entirely optional. On this particular ship a simple ignition stick is fastened to the fire-wall and coil and heavy-duty battery strapped thereon; the heavy battery doing away with boosters. No automatic timer is used, the current broken on the Ohlsson "23."

Wing

Ribs and wing tips are shown full size. All ribs are medium hard 1/16" sheet. Leading edge, 3/16" square; spars, 1/8" x 1/4"; trailing edges, 1/8" x 1/2". Wing tips W-1 and W-2 are from 1/4" sheet, W-3 from 1/8" sheet.

Dihedral: Lay one wing panel flat on the work bench and raise opposite panel 4". Inlay center section of wing with 1/16" flat on top and bottom. Install control line guides through wing spars, sixth rib from the tip. These guides can be bent from a straight pin and glued in place.

Covering

We urgently recommend using silk for covering throughout the entire ship, due to abuse model will receive. The ship explained here is about six months old and has had well over 700 flights! Use about five coats of clear dope before color. When doping the wing hold it in a warped position until the dope is dry; do this for each coating.

Joy-Stick

The belly plate is made of 1/4" plywood, 6" x 8" inches. The joy-stick support stick, made of any suitable hard wood, is screwed to the belly plate and braced up with hardwood gussets. Slot out the front of the

support stick to receive the joy-stick. Cut the joy-stick to shape and drill in five holes, one for the pivoting point and the others for control lines. You can use either the two outer control-line holes or the two that are closer together, depending on how much control action you want. When in use the belly plate is strapped to the operator with his pant's-belt. When not in use the plate will serve as something to wrap the control lines on.

Test Flying

Make your first test hops on a calm day, or better still indoors. Have a smooth place from which to take off and land; keep the control lines from dragging on the ground, specially when the ship is released for take off. Have someone hold the model up in flying position, holding the elevators perfectly level and the joy stick perfectly straight. Then connect up your control strings, being sure that the tension on both strings is the same. Set the model on the ground so the ship is at a ninety degree angle to the lines.

It is necessary that the motor be opened almost full in order to keep perfect tension on the control lines, so be very careful and DON'T OVER CONTROL. Nine out of ten persons who have tried flying Remote Control over-control the ship every time. On the take off don't let your assistant push the ship; let it go unassisted. If you do, the ship will either be pushed towards, or away from, you too much—resulting in loss of control each time. On the take off, keep the stick forward until you've reached the ship's flying speed, then pull back slowly for the take off. The minute the ship leaves the ground move the stick slightly forward, to prevent stalling (not too much). Then proceed to "feel" the model out; see how she responds to the touch of the stick.

Once you've acquired that you can dive and climb her to the limit. Be sure and not let the ship climb more than a forty-five degree angle; that is, the angle of the string from you to the ship should be not more than forty-five degrees. After a few flights you can just about tell when the motor will quit. Try and have the ship several feet off the ground when the motor stops, this way you can get the nose down into a good fast glide and level it off for a perfect three-point landing. After you have acquainted yourself with your ship you won't have to worry about flying in windy weather.

Here are a few pointers on windy weather flying: Always take off with the wind, because by the time the ship leaves the ground it will be flying cross-wind and the control lines will be taunt; perfect control will be had while climbing into the wind. Once the ship comes cross-wind again take a few steps backwards in order to keep the lines taunt; otherwise you'll lose control.

Recently we perfected a method by which we could regulate the speed of the engine; making it possible to throttle down and land, open 'er up again and take off, hedge-hop, zooming or zazzing the motor in flight. If any of you M.A.N. fans like to tinker, here's how:

Use an old Brown Jr. choke nut and slip it over the end of your air intake tube; drill holes into the tube the same size as in the choke nut. If you want, make your own choke nut from a piece of brass tubing about 1/2" long, drilling and closing one end off by soldering a piece of sheet brass to it. Be sure the choke nut turns very freely on the air intake tube. Solder a piece of .034 wire across the rear of the nut, to act as an arm to close and open the air. Solder a fine spring to the one end of the wire arm, to bring the choke nut back to a closed position. To the other end connect ordinary sewing thread for the control line; run this thread through the necessary pullies, made from straight pins, bringing it out from the fuselage between the two elevator control lines. An extra throttle control arm can be screwed to the joy-stick support stick.

During the past years, at practically every big gas event, you heard of model builders wanting to compete in gas speed events, but the great possibility of smashing up ships in speed trials prohibited competition in this type of flying. Speed gas models are now a reality. Contests can easily be had with Remote Control. A definite diameter for the circling ship can be set up and times calibrated. Speed contests of this sort may be run off more easily than those we now have with rubber powered ships; it would be impossible for the ship to fly out-of-bounds as rubber powered ships do so often. When flying gas speed, a definite diameter circle could be set up, with a certain number of laps to be flown.

New designs of speed ships may be built up, wing airfoil sections experimented with, engines and propellers tested; all making keen competition between contestants. The possibilities of advancing and incorporating new ideas, such as flaps, retractable landing gears and all the other things that a real speed ship has, can easily be worked out with the use of control lines, opening an entirely new, untouched field for the model builder to experiment with.

Many, many happy landings.

Nationals Go To Chicago

(Continued from page 15)

the competitive events, has already started its schooling programs to familiarize timers, processers and the many other officials requisite to a successful Nationals.

Contest Officials

Before you go much further, you may want to know the set-up so far as the rest of the officials are concerned. That's easy; here's the starting line-up: Albert L. Lewis, Executive Director of the A.M.A., has been duly initiated as Meet Chairman; Steve Meuris, of the Chicago Park District, Meet Manager; John Rappold, also of the Chicago Parks, Contest Director; Bruno Marchi, Chairman of the A.M.A. Contest Board, Field Judge, and Maurice Roddy, aviation editor of the *Chicago Times* and National Commander of the Air Cadets of America, will serve in the capacity of Publicity Chairman.

Some of the newer attendees at National Meets may not be familiar with the past record of the 1941 Contest Director, Johnnie Rappold. Back in the early days of American aeromodeling when not more than a few thousand die-hards could distinguish between balsa and balsam, John won many honors in national competitive

events sponsored by the Airplane Model League of America. Even though still at a tender age, he toured the States under the sponsorship of the A.M.L.A. and was responsible for interesting a number of folks in model aeronautics. However, who are we to suggest that those disillusioned devotees of the hobby who were roped in by Rappold's lectures and model demonstrations seize this opportunity to go to Chicago in July and knock him over the head?

So much for personalities, here is the schedule of events:

July 1, Tuesday—Registration.

July 2, Wednesday — Indoor events and Record Trials.

July 3, Thursday — Outdoor events and Flying Scale competition.

July 4, Friday—Class A and B gas models.

July 5, Saturday — Class C gas models, Moffett finals, with banquet in the evening.

The Radio Control Event will be run off any and all days desired by the R. C. entrants and Special Events officials.

Studying that schedule for a moment, it will be apparent that those who do not participate in indoor flying need not arrive in Chicago until Wednesday evening or Thursday morning, and those who do not participate in any but gas events need not arrive in Chicago until Thursday night or Friday morning. There have been so many excellent extra-curricular activities planned, however, it is highly desirable that all contestants plan to spend as much time in Chicago as possible.

These events include special movie parties and gratis admission to amusement parks, as well as sight-seeing trips to various points of interest in Chicago.

A.M.A. Annual Meeting

In the way of Academy activities, A.M.A. Leader Members should start planning now to attend the annual meeting of the Academy, which will be held on Sunday morning, July 6. This session is not expected to last more than half-a-day so delegates can start traveling back to their home-lands by early Sunday afternoon. The reason the Academy meeting is expected to be short, snappy and packed with interest is that specialized subjects will be covered in committee meetings prior to the annual session.

These meetings will include a gathering of the Contest Board to listen to and pass upon suggestions for 1942 rules (come prepared to speak for your ideas and have them in typewritten form so you can leave them with the Committee); a conclave of the members of the Technical Committee, who will see what is new in the way of research and who will receive the suggestions of any and all modelers; as well as meetings of the Academy's Resolutions and Nominating Committees.

According to Mr. Roddy, the *Times* will probably hold an informal reception for all Academy Leaders on Tuesday or Wednesday evening. It is also anticipated a special reception will be accorded the feminine contingent, including wives and sisters of contestants.

That the Committee on Arrangements has been working overtime even at this early date is evident in the following announcements. The usual low hotel rates will apply to contestants as well as helpers and members of their families. Lower parking rates are anticipated this year through the use of outdoor parking lots which come under the jurisdiction of the Hotel Sherman, headquarters hotel for the meet. Good camping facilities are to be available, probably with the site moved to a large tourist camp not far from the scene of the outdoor events. Transportation will be provided between the Sherman and the indoor flying auditorium, the International Amphitheatre, and the outdoor model airport, the Park District's own field at 79th Street and Keeler Avenue.

An industry show is anticipated which will be run by the meet management with the approval of the Model Industry Association, or will be run by the Model Industry Association for the meet management. As we rush off to press with this first news of the meet, details of the show have not been fully settled. At all events, plenty of materials will be available to contestants for their usual last-minute building and repairs sometimes necessitated by bringing models long distances in automobiles or trailers.

An extra special, super-dooper, official program is contemplated which will be given without charge to each contestant and spectator. The program also is expected to be distributed in large numbers to Academy Chapters throughout the country, recreation departments, model dealers, N. A. A. Chapters, newspapers sponsoring model clubs and other groups who will be interested in the story of the Chicago championships. The program is expected to include pictures of all the traditional trophies which are in custody of the Academy, as well as many new awards presented each year through the generosity of model and full-scale aircraft concerns and other organizations or individuals interested in the furtherance of model aviation through successful national contests.

No Merchandise Awards

Listing of traditional awards and new prizes will be presented in the columns of MODEL AIRPLANE NEWS prior to the July Meet, enabling contestants to decide early what prizes they want to win. A new policy of presenting no merchandise prizes will be of interest to all. It has been pointed out that when a National Model Airplane Contest winner returns to his home town with a kit or motor, he may be greeted by a neighboring model-building friend who was unable to get to the meet, but quite able to buy the same merchandise the Chicago winner received. This "no merchandise" policy is expected to receive the hearty approval of model aircraft concerns, because they will be the first to see the value of such an award is lost the moment it is flown out-of-sight or sold. Even the smallest cup or trophy bearing the name of a donor has a more lasting effect than 100 Grade A batteries or half a dozen deluxe motors.

The Committee on Arrangements also confides a novel type of contestant's identification will be utilized this year. Instead of the usual contestant's tag, a special felt arm-band, similar to one employed by the South Jersey Gas Model Airplane Association, will be presented to each contestant (the same arm-band in different colors will be worn by officials) and at the conclusion of the meet the contestant can have this arm-band sewn on a sweater or jacket to denote his participation in the '41 competition. This same procedure is used by rifle associations and other sporting groups.

Insurance coverage for meet participants, as well as spectators at the indoor and outdoor events has been arranged; the 1940 Nationals were the first so completely covered. "No charge" parking under the supervision of Chicago Park District police and City of Chicago police will be the order of the day at the outdoor meet; those who attended last year's indoor events can assure you of the splendid parking facilities made available by the International Amphitheatre.

The "Daily Blurb" will make its appearance again this year, and preliminary consultations of its distinguished editorial staff headed by Willet Fly, well-known model champion, indicate that complete results of the meet will be included in the Banquet Edition of this leading aviation journal. The excellent work-shop facilities enjoyed by the contestants last year are again to be provided by the Hotel Sherman. Contest Director Rappold says that the results of each day's flying will be available 60 minutes after the time of the last flight has been turned in under a new system perfected as the result of last year's Nationals and used with great success in the 1940 Midwestern States gas contest. A different type of lunch than previously used will be presented to each contestant each day. These lunches will be prepared by a well-known Chicago catering service and the sum and substance of the meal will set new highs according to the Arrangements Committee.

Refinements in Events and Judging

To facilitate meet procedure, entries in the Flying Scale Model event will be "processed" the evening preceding that event, Wednesday, July 2, by the Special Events Committee. The processing will be done at the Sherman in a large room, and, although the public will be admitted to see the judges in action, neither the spectators nor contestants will be permitted to disturb the judges during their deliberations. The "Best Finish" event is being extended to include any type of model, flying or non-flying, powered by rubber, gas, or mental telepathy, and the judging will be on the basis of best construction and finish with no flying required. This change is the result of several superbly finished models which required several years to build being washed out in the 1940 competition when their owners were required to fly them to qualify for their awards. Since these models were never built to fly, the results were very sad indeed, and then and there the contest became a beauty event rather than a flying event. It has been proposed that

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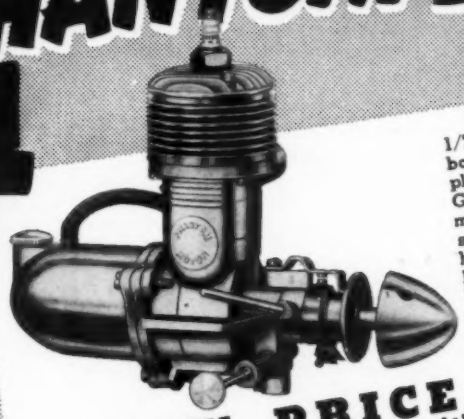

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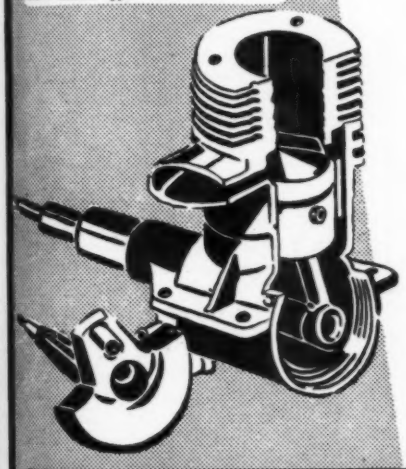

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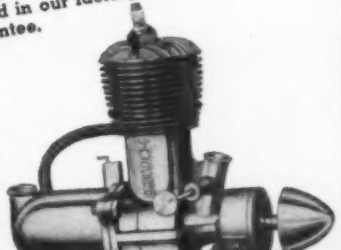

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the public be permitted to vote for these "beauty" models, and the sponsors feel that is an excellent suggestion.

An auxiliary processing station will be set up at the Sherman so wing areas and fuselage cross-sections can be checked in the cool of the evening rather than the heat of the day. By having this measuring done during the first evening he arrives, a contestant will be spared the laborious task of waiting for the cross-sections and wing areas of his various craft to be determined on the field. The S.P.S. (Sherman Processing Station) will use non-removable decals to indicate "O. K.'ed" areas of cross-sections and wings.

Once again the Fred W. Megow Best Club Award will be eagerly contested for by various Academy Chapters, and further details concerning this event will be available soon. For application blanks and complete data concerning the Chicago Championships, contestants should write to S. J. Meuris, Meet Manager, 1941 Model Airplane Championships, c/o Hotel Sherman, Chicago, Illinois. Requests for a single set of entry blanks should contain five cents in stamps, and those desiring a supply for club use should enclose twenty-five cents in stamps. Application blanks will also be available from the Academy of Model Aeronautics, Willard Hotel, Washington, D.C., as well as from the newspapers sponsoring Air Cadets of America units, but regardless of where you write, be sure to include the necessary stamps.

So much for the intimate details. It's now up to you to get out pencil and paper and figure how you are going to get to Chicago and how you are going to get back with all of those trophies you'll win.

A Radio Control for Gas Jobs

(Continued from page 11)

Our pilot bulbs will light one after the other across the board until it reaches the right rudder bulb. Keeping in mind that we have neutral rudder and that we want right rudder, it is obvious that two impulses from the transmitter are required; due to the fact that the selector alternately selects the motor and the tail circuits. Now, releasing the button at right rudder bulb position will stop the Conjulator mechanism and allow the time delay in the plane to function. Approximately one second later the tail mechanism will operate. It can be seen that if we still desire further tail control, say neutral rudder, it will be necessary to transmit two more impulses and then allow time for the time delay again to function. In the same manner control of the motor may be obtained. The maximum time between any two controls is approximately two seconds. It is clear that the number of controls that can be operated depends upon the number of contacts the selector has; three contacts on the selector will permit the operation of three different controls. This may seem a complicated and drawn out process, but in reality it is not. It is all taken care of automatically by the Conjulator.

Of course, the above is but one of many systems possible, but to our knowledge, to date, it is the best suited for the average size gas model possessing both control of motor and tail. Considering that the Dolphin complete with radio equipment weighs just seven pounds proves the point. It is without doubt that there are many factors which one must take into account in choosing a radio control system for a gas model. It would be hardly possible for the prospective builder, be he radio amateur or model engineer, to consider his thoughts primarily to one end and expect the other to just fill in. It is a requisite that the best of both radio and airplane be obtained. To have an "old crate" with a good radio or a good ship with a "bum" receiving system will not result in success. In other words "two heads are better than one." So, if you are a model builder interested in building a radio controlled plane, look around for a radio amateur and vice versa. The authors chose the Dolphin for radio control because of the following reasons:

1. It is obvious that the ideal model to be controlled by radio would be one capable of lifting at least forty percent of its weight in payload. The Dolphin not only qualifies in this respect but also possesses streamlined proportions that any ultra modern modeler would wish. In addition, quite contrary to its appearance it has a tremendously low flying speed, a desirable feature since it reduces the sensitivity of control surfaces (rudder flap) enabling the plane to make smooth, stable maneuvers.

2. Because of its low flying speed, to obtain the maximum power from the petite Brown, a propeller of low pitch, large diameter, and considerable area would be required. All but the diameter qualified for our use since a large diameter produced a large torque. An undesirable force because it made turning to the left a dangerous maneuver. To cut down the diameter would result in a decrease in thrust. The solution was a four bladed propeller of medium diameter. It proved extremely satisfactory as it not only did the "job" but decreased the vibration of the motor to a large extent.

3. The mounting of the radio equipment in the model is another problem which is above triviality. It would be wise before inserting the radio to mount dummy weights at their respective positions and test fly the model, tabulating the position and weight of each item so that when the real thing is mounted no surprise would result. Probably by now little need be

said about the placement of weight about the C.G. Inserting weight in a model will either help or "break it." The Dolphin in this respect came through like a soldier. The monocoupe fuselage provided ample room plus the assurance that the equipment could be mounted. Of course the fuselage had to be completely hollowed out, which did not impair the strength of it.

To those who are interested in designing a radio model, the following is an outline of the features that a successful radio model must incorporate:

1. Degree of stability. . . . By this is meant how stable the model is designed. A too stable model will be difficult to control.

2. Controllability. . . . This is concerned with the proper proportioning of the control surfaces.

3. Proper placement of C.L.A. . . . The placement of this center is an important consideration if the model is to be capable of turning under the actuation of the rudder.

4. Action of propeller. . . . To produce torque and gyroscopic torque. Proper counter balancing to minimize effect of these when model is turning.

5. Ballasting effect of radio equipment. . . . Placing of batteries, receiver, control mechanisms, so desired position of C.C. is maintained.

It is hoped that this article will be of some help to those interested in radio control. It should be realized that radio control is by no means an easy task, yet by no means an impossible one. It is within the scope of each and every one of us, if we but meet the problem properly prepared. "Time and work shall merit its reward!"—For more information address: Editor, MODEL AIRPLANE NEWS, 551-5th Ave., New York, N.Y.

What Shall It Be—Models or Planes?

(Continued from page 13)

1939 Academy conference with a very absorbing analysis of the "over-poweredness" of most gas models contends that a "transport type" of model results in some very pretty flying, fewer lost models and more instruction and education for the builder. Mr. J. is backed up by Dick Lindsey, also of N.A.C.A., who has been working along with Mr. Jacobs on this idea. Although Mr. Jacobs' suggestion has been followed by some Virginia Model Association flyers, in comparison with the many modelers who work at N.A.C.A. (the aeromodelers' haven), it would appear his proposals meet with the same reception accorded most prophets "in their own land." The theories and suggestions of this gentleman should not be cast lightly aside, however, since he is acknowledged as one of the world's outstanding aeronautical engineers and was the recipient for 1937 of the Sylvanus Albert Reed award presented by the Institute of the Aeronautical Sciences for the outstanding contribution to aeronautical science during the year.

On the other side of the fence is Arthur B. Brand of Rockford, Ill., a most enthusiastic modeler who is familiar with all sides of the model airplane hobby—commercial, competitive and sponsoring. He

minces no words when he says models should be what the modelers want to make them and should fly in their own inimitable way. Quoth Mr. Brand recently:

"My conclusion is that gas model flying should be primarily a sport, a competitive game which requires careful training and preparation, through knowledge of the equipment used, recognition of responsibility toward the property and persons of others, and an accepted code of fair play and good sportsmanship. Let's quit trying to tie it up with the high-speed aerodynamics of full-scale aviation. Let's try to keep our flying within the bounds of a reasonable amount of terrain, instead of cutting our over-powered ships loose to be potential sources of damage or trouble. Let's encourage ships that will last, that will fly consistently and reliably, and that won't break all to pieces when they meet an obstruction. Let's make the sport appealing and worth while to a lot of people that are just laughing at it now.

Now take us. We don't know who's right and who's wrong. Maybe it's like the Republicans and the Democrats—both have good ideas. What we do know is that regardless of what type of models are built, as long as common-sense safety regulations exist annd are followed, and as long as we develop model airports for the activity, the sport is bound to benefit all who participate.

Perhaps you have some good ideas on the subject of just how models should perform, just what requirements they should meet (if any) from a design and duty standpoint. If so, shoot them in to *Model Airplane News*, attention of the Instructor, and then the other modelers can see what you have to say.

Norwegian Nemesis

(Continued from page 23)

edge and is of X-4130 corrosion-resistant stainless steel sheet. The engine accessory cowl has a 7/8 inch ventilating duct around the circumference of the fire wall. The engine mount is of chrome-molybdenum steel tubing and attaches on the fire wall at four points, welded to the engine supporting ring at its forward end. This structure supports the giant 1,260 pound engine through eight engine-mount bolts secured through Lord anti-vibration rubber shock mounts. The oil cooler is located atop the power plant compartment and is secured by two heavy fabric straps to permit vibration stresses. The oil cooler is mounted with its face set at a 45° angle with the vertical at the bottom of the power plant compartment. A small retractable scoop lowering 3-5/8 inches down into the slipstream works in unison with the hydraulically controlled cowl flaps, permitting entrance of air to the oil radiator. The spent cooling air is forced out the ventilating ring through vacuum action of the slipstream.

The carburetor is of the down-draft three-chamber type mounted atop the engine accessory gear compartment. Air for the carburetor is taken from a fixed duct located in the nose of the engine cowl. This duct is 10-3/4 inches wide at its mouth and narrows as it turns inside the cowl and down into the carburetor.

The engine accessory drive compartment includes fuel pump, oil pump, hydraulic pump and vacuum pump and is cooled through another ventilating ring aft of the engine removable cowl, which has 1 inch greater radius than the engine fixed cowl.

The oil tank has a capacity of 13 gallons of oil with provisions made for foaming and expansion. The oil system is provided with a Cuno oil strainer as well as an oil warm-up accelerating compartment within the tank.

FUSELAGE: The Douglas 8A-5 has a full monocoque fuselage and is of the famed Northrop design in which no stringers or channel stiffeners are used. A series of eight bulkheads are laid out vertically in the fuselage jig. The sheet Alclad 24STAL skin is broken in and then rolled in such a manner that the top edge of each strip serves as the stiffener. These sheets are riveted to the bulkheads and lap-jointed over each other so the resultant structure is identical to the conventional bulkhead-stringer combination in strength, but much lighter in weight and much stronger in bending. The fuselage is built in two halves; an upper half, including cutouts for the crew, and a lower half which is constructed integrally with the wing center section. The lower half-shell also contains the cutouts for the retractable bombardment turret and tail wheel.

WINGS: Chief feature of the Douglas 8A-5 is its odd wing structure, first perfected by John K. Northrop with his famed "Alpha" mail-plane and subsequent transport models and later used on the widely-renowned Douglas DC-2 transport. Working on the theory that a stressed skin wing should be lightly loaded, Northrop decided to completely do away with spars and carry bending and shear loads throughout the entire wing structure. This saved weight and as a result the "multi-cellular" type of wing structure was born. In this method the wing actually is composed of eight spars; each rib-spar intersectional compartment is a small box-girder unto itself. The wing itself is divided into five main portions, the center section built integrally with the fuselage bottom-shell, two outer panels and two removable wing tips. There is no integral means of attaching the outer panel with the center section. The ends of the spars are covered with sheet rubber and the outer panel is supported in place. The two sections are then joined through the use of 157 bolts placed laterally through the wing joint bolting angles riveted to each wing sections. This

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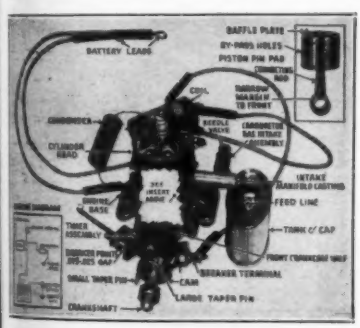

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entire structure is covered with an attach-angle strip which is stretched into position and bolted at the trailing edge only.

The ailerons are of aluminum alloy construction and fabric covered. Through use of lead weights, bolted into the nose-section sheet covering, they are dynamically and statically balanced. The flaps are of the peculiar "perforated" variety in that a series of 1-3/4 inch holes in four parallel rows have been punched out of them. This, because small areas of burbling air are set up about each hole which gives much greater drag than the hitherto used flat sheet flaps.

LANDING GEAR: Because of the peculiar multi-cellular design of the wing, many disadvantages have had to be overcome. Fuel tanks, bomb racks or landing gears cannot be stowed within this type wing as the cutting out of a portion of spar or rib would destroy its strength, rigidity and unity. Therefore the landing gear retracts inward and upward into two formed-sheet inverted "dishpans" located on each side of the fuselage forward of the wing leading edge. The landing gear is composed of two single-strut full cantilever legs, two hydraulic brake assemblies and two large streamlined tires. No anti-torque forks are used as the upper swivel joints of the landing gear legs overcome this condition. Retraction is by hydraulics with a visual and mechanical warning system employed. The up- and down-latches are mechanically and automatically operated.

HYDRAULIC SYSTEM: Landing gear, flaps, engine cowl flaps, bomb doors, bomb-aimer's turret are hydraulically controlled. The engine cowl flaps are operated through use of a single actuating strut operating a system of linkage which opens and closes the 16-cowl flap sections. In addition the oil-cooler retractable air scoop is linked mechanically with the engine cowl flaps so that both engine and oil cooler are instantaneously provided with needed cool air. Landing flaps are actuated by a single actuating strut with two opposed pistons which open and close in opposition to each other. The conventional link-arms are interconnected with the flap-operating torque tube and with each flap stiffener. Full deflection is set at 45° down.

EMPENNAGE: The vertical and horizontal stabilizers are of full cantilever construction, the horizontal stabilizer spar being a through-beam bolted to the rear of the fuselage tail post flange. Both stabilizers are of symmetrical airfoil section, the horizontal stabilizer being interchangeable right-with-left and built up on a framework of ribs of the pressed-flange design. The skin plating is of the rolled-channel section identical with the fuselage. The skin is riveted to the ribs and spars and houses control rods, trim tab drums and electrical wiring. The elevators are riveted to a through torque tube which is, in turn, attached to the horizontal stabilizer hinges by bolted ball-bearing housings. The rudder is of the balanced type, standard dural construction, fabric covered. Both elevators and rudder are dynamically and statically balanced through lead-weighted nose sections and are equipped with controllable trimming tabs operable in flight from the control wheels located within the front and rear cockpits.

EQUIPMENT: The Douglas 8A-5 is completely equipped with a full set of flight and engine instruments including a Pioneer altimeter, sensitive altimeter, clock, tachometer, airspeed indicator, rate-of-climb indicator, compass, Kollsman air temperature gauge, full pressure gauge, oil and temperature gauges, carburetor temperature gauge, Weston thermocouple, ammeter, MotoMeter fuel gauge and suction gauges in both cockpits. The front cockpit only has a Sperry gyro-horizon and a Turn-and-Bank indicator. The pilot is provided with a complete command set receiving and transmitting radio equipment, an enclosed loop antenna and inter-phone switch and microphone. The rear cockpit carries fire extinguisher, transmitting switch and inter-phone. The co-pilot-observer-rear gunner-bombardment officer also handles the bombing equipment described in the following paragraph. Standard equipment includes Goodyear tires, Bendix wheel and brake assemblies, Cleveland pneudraulic shock absorbers, Exide aircraft battery, SKF, Norma-Hoffmann and Fafnir engine and plane control bearings, Pyle-National navigation lights on wing tips and rudder, S & M landing lights located within each landing gear well, Walter Kidde fire extinguisher and Exclipse electric engine starting system.

ARMAMENT: The Douglas 8A-5 is one of the most heavily-armed attack-bombers in its class. Each outer wing panel carries one .30 and one .50 caliber machine gun. These guns are free-firing electrically-controlled with manually operated charging and clearing systems. The thirty-caliber guns carry 200 rounds of ammunition each, the fifty-calibers carry 800 rounds each. The entire fuselage structure, from the bottom to the closed section between the cockpits, is a bomb bay. This structure consists of vertical-type bomb racks, each bomb being located in a separate compartment. There are four rows of twelve bombs each; these are the twenty-five pound fragmentation variety used for troop and personnel assault and various light bombing work. The bomb exit chutes in the fuselage bottom are not unlike conventional flare exits in that they are spring-mounted to open by the released bomb's weight and to close after its exit.

The rear gunner handles a single 30-caliber free-firing machine gun mounted on the newly-patented Bell Aircraft machine-gun adapter. Eight machine-gun ammunition containers, holding one hundred rounds each, are stored in shelves within the rear cockpit along the rear portion of the fuselage.

Immediately below the rear gunner's station is a large retractable enclosure which hinges from the rear and swings down into the airstream. The forward portion is glass enclosed and the implacement is used as an observatory when the rear gunner acts as bombing officer. A bomb-sight is mounted on the forward lower portion of the hinged section. It's the free-floating, hand-operated design used for quick aiming, where accurate aim is not as important as speed by the attack-bomber on offense.

CREW: The pilot is located high and well forward, enclosed by a sliding hatch constructed of moulded plastic acetate sheet assembled with tubular rivets. The wind-

shield is shatter-proof, high-grade glass of the familiar blue-green tint to dampen sun glare. The rear gunner is also enclosed with a special sliding canopy. The hatch's rearmost portion hinges at its lower, forward point and folds upward, exposing the rear gun as it swings out on its trunnion. The hatch's upper portion thus projects up into the airstream 2-3/4 inches, providing shelter from the airstream. When a great field of action is desired, the entire structure may be pushed forward within the covered portion between the cockpit.

SPECIFICATIONS: The Douglas 8A-5 has a wing span of 47 feet 9-1/4 inches and is 32 feet 7-1/2 inches long. It stands 9 feet 9 inches high and has a wing area of 364 square feet. This gives it a wing loading of 20.7 pounds per square foot of wing area, taken from its empty weight of 5348 pounds, useful load of 2320 pounds and gross weight of 7668 pounds. This also gives it a power loading of 8.9 pounds per brake horsepower. A fuel capacity of 252 gallons is stored in two large tanks located within the fuselage below the pilot's compartment, the upper surface of the wing center section acting as the tank's lower surface. A reserve supply of 86 gallons is contained in the left tank.

PERFORMANCE: For its weight, power and class, the Douglas 8A-5 is one of the best performing ships in service today. Top speed is 268 miles per hour; cruising speed at 62-1/2% of throttle, 204 miles per hour and landing speed with flaps down of 65 miles per hour. Service ceiling is of 28,400 feet and absolute ceiling, 29,680 feet. It can climb at 1460 feet per minute and has a service range of 1450 miles.

This, then, is the ship with the history. This, then, too, is the ship which will make history, which will join the gallant steeds of Haarfagr as he joined the scattered Norwegian tribesmen, of Magnus I as he drove wicked Canute of Denmark from Norway, and of Haakon VII as he severed the final tie with Sweden and gave Norway her independence. The Douglas 8A-5 attack-bomber may well play the leading role in this modern story of a people who will rise again, this time on wings that spit death-dealing bullets.

Build a Model Douglas Attack-Bomber

Here is the scale model you've been waiting for, a ship which is simple to build, which is of conventional design. For this Douglas 8A-5 is a model you "detail hounds" can go "wild about." And don't forget that camouflage! It'll make your model as deadly-looking as the big ship which is now fighting Hitler's Hordes over London.

FUSELAGE: Take a block of good, clean, solid balsa and carve to the rough shape of the fuselage. Cut out the special silhouette-templates; properly fit them in place. With a well-protected razor and model-knife, whittle these rough edges down to shape. Now sandpaper, using a rough, coarse grade for first application and finishing off with a fine grade before pronouncing the job done. Take great care in applying the templates and make sure that fuselage cross sections are in true alignment with templates.

WINGS: Cut both wing panels from the right wing shown on the drawing but be careful, in shaping them, you form wings in opposite directions. Whittle rough outlines and airfoil shape, then apply templates. Sand the wing smooth and finish off with a fine grade of sandpaper, making sure an accurate airfoil shape is maintained. Paint the wing and fuselage before assembling. Camouflage should consist of brown, green and dark red in odd patterns all about the fuselage and wings.

TAIL SURFACES: These are cut to shape as shown on the drawing and sanded into true symmetrical airfoil sections; that is, both surfaces, upper and lower, have identical curvatures. These, too, may be camouflaged according to general pattern of the fuselage.

Assemble the ship, using purchased tires and a purchased cast, three-bladed propeller. Pay careful attention to the three-view drawing and excellent photograph shown at the beginning of the article. Upon completion spray the entire model with a coat of clear lacquer. Why not mail photographs of the completed model to MODEL AIRPLANE NEWS, 551 Fifth Avenue, New York City?

Flash News

(Continued from page 33)

don-to-Melbourne Race and accepted delivery on the many DC-2 and DC-3's purchased by his company. When war was declared 40 of K.L.M.'s 60 pilots went into military uniform; many were killed in air action. Parmentier escaped, first to France, then to England. There he made a strange deal with the R.A.F.! He was to have a ship, preferably a Dutch plane, fuel and oil and freedom to attack the Germans in his own way. His family had been wiped out in the Blitzkrieg. For weeks he has been visiting Rotterdam nightly bombing, blasting and machine-gunning everything in the air and on the ground. The R.A.F. sees him disappear after each raid only to return for his Koolhoven fighter, gassed and armed, the following evening. The Nazis have placed a price equal to $10,000 on his head.

Correction

The S.J.G.M.A.A. Contest will be held at Pine Valley, N.J., on April 20 and not on April 23 as stated in the last issue. This will be an A.M.A.-sanctioned contest and detailed preparations are being made to insure its success.

Thousands of War Birds

(Continued from page 7)

ground bases to the pilot in the air. Instead, regulation code signals complete the communication. Therefore it is necessary for the cadet to have a good understanding of Morse code; this he is taught in another branch of the ground school course.

The student need not feel embarrassed if he does not know the Morse code when he begins this study; it is not part of the examination and he need not be acquainted with it. In fact the course is based on the principle that he knows nothing of the subject. Thus he begins with the alphabet and numerals and is taught operations until he can average seventeen words per minute, both in transmitting and receiving.

When this is completed he is finished with ground school work. A thorough knowledge of wings, controls, engines, weather, machine guns and radio, all of which are big factors in military flying, is at his finger-tips and now he looks forward to the actual thrill of flying. He forgets classrooms and books—but not what he has learned—and takes to the air!

A competent instructor, who is selected not only because he is an expert pilot but also because of his teaching ability, takes the cadet aloft many times in the training planes equipped with dual controls and interphone connections between cockpits so that he can talk to the student and point out weak points in his flying ability. Sometimes the cadet masters control of his plane with only a few lessons. This of course, is due to the natural flying aptitude of the student. There are some, however, who cannot master the art of flying. Often times these are students who rate highest in ground school work, but through no fault of their own, cannot develop the necessary co-ordination of arms, feet and mind, so essential to control of an airplane.

It is during this period with his flight instructor the student actually learns to get the "feel" of the stick. If he has the "makings" of a pilot he will automatically accustom himself to the various control manipulations and becomes a part of the plane he is flying. With his instructor in the plane, but not at the controls, the cadet does take-offs, landings, spins, loops, dives, half rolls and other acrobatics. All of this takes place, of course, under the direction of the instructor who tells him just how to perform the various stunts. After he receives about eight hours of this dual instruction and shows that he has good "air sense" he is ready for his solo flight.

To solo is the biggest thrill in the life of any pilot, whether a commercial aviator or army flier—It is the final test to prove whether or not he can fly.

He strolls out to the "line" nonchalantly, trying not to attract too much attention from his fellow students because of his evident nervousness; he adjusts his parachute to make sure everything is "okay," just in case—Then he climbs into the cockpit and receives a few parting words from his instructor. Little does he know that this man who has taught him what he knows about flying suffers with him from the moment he takes off alone until he is safely back on the ground. He may be a "hard-boiled" instructor, but he knows what it

means to solo . . . He once did it himself.

The cadet makes his first take-off, circles the field, then attempts to land. This is the toughest part of soloing and the student goes through nerve-racking moments before he finally sets the ship down to earth. Most of the time he makes an imperfect landing, but once the ship comes to rest he knows he has flown, alone, and the fears which have been in his mind all during his first solo seem to vanish. Much to his satisfaction he knows it will be only a matter of time before his control of the ship is a natural procedure.

When he completes this solo flight he enters into a wider flying range. That is, he no longer is confined to the vicinity of the school's own flying field, but ventures to strange landing fields on cross-country flights. He flies both day and night, in rain or shine, to acquaint himself with conditions he might encounter when on actual duty with the air corps.

This is the start of his basic training. He has been transformed during his weeks at this school from the average citizen, who knew comparatively nothing about an airplane, into a pilot who is not at home without one. Constant flying and careful study of new developments in aviation are the only factors which can now improve his knowledge of flight.

Thus, he leaves the primary training school—it may be any one of the nine civilian training schools—and goes to Randolph Field for ten weeks of basic flight training. Here, he gets preliminary instruction in formation flying and military tactics. He uses machine guns at target practice, putting to work all the knowledge he has learned during his primary stage.

Although most of the training at Randolph Field under the new program is a higher degree of the primary stage, this air college is the backbone of the U. S. Army Air Corps and no school can ever take away its high standard of training, which has turned out some of the world's most competent flyers. Here is the greatest flying school on earth—Uncle Sam's West Point of the air.

Spread over 2300 acres, this training center appears like a small city with its many buildings and ribbon-like roadways creating an artistic pattern on the earth's surface.

On the ground the 170 ft. tower of the Administration Building is visible for miles around and serves as a landmark for those who wish to visit the field. It stands at the end of a roadway which marks the entrance. At night a powerful beacon atop the tower sweeps across the sky and guides home many a wandering fledgling who has strayed from his hangar.

Near the entrance is a small Spanish gate-house which sets back from the highway and houses the guards. Two parallel drives with a large parkway of green between run from the gatehouse to the administration building where they branch off to various sections of the field. These two roadways and a small railroad track which is necessary for carrying supplies to the warehouse are the only obstructions in 1900 acres of landing space. Should a plane be forced to make an emergency landing, they would not present serious obstacles since they are built flush with the earth to take care of such an emergency.

The field is about two miles across in any direction and represents a flat plateau surrounded by comparatively rough country. There are no runways, but the landing area is well sodded with Bermuda grass, which forms an excellent landing base in all kinds of weather. An effective drainage system keeps the ground in good condition for take-offs and landings.

The building area, consisting of officers' homes, cadet barracks, essential supply buildings and general offices, is located in the center of one great flying field, covering approximately 400 acres. Within this area is a great circular boulevard and from its hub radiate roadways in all directions. Centrally located in this circle, at a spot which is also the geographical center of the entire field, is the officers club house, equipped with every modern luxury to afford officers and their wives diversified entertainment and comfort.

The officers' homes are also within this circle. Many of these are two-story buildings, others are bungalows; all of modified Spanish design. Their exteriors are stucco in various colors, and combined with the garden work of flowers and greens, give the appearance of a modern city's best residential centers.

In all there are 339 buildings on the field, most of them homes and quarters for officers and non-commissioned officers. Recreational buildings, hangars, shops, classrooms and barracks, all of which are essential to the health, education and housing of the students who enter the institution, make up the remainder.

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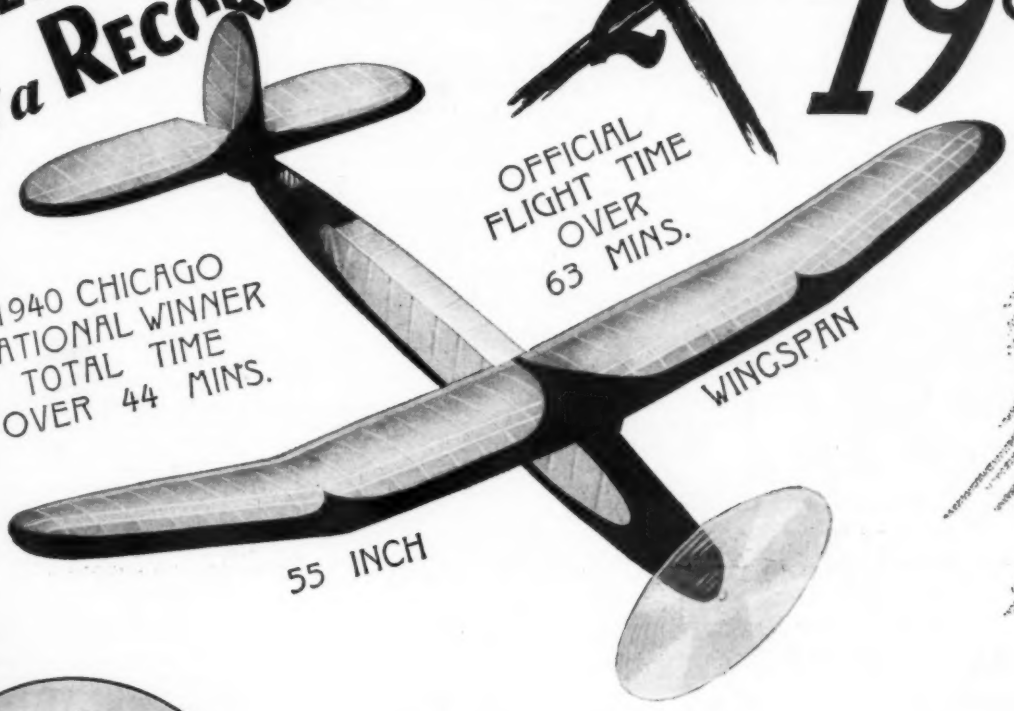

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1 16" True Pitch Lawrence Propeller
1 5½" Giant Tube Cement
1 25 x 38 full size plan
1 Detailed propeller plan
3 Sheets full size white tissue
1 Sheet full size black tissue
1 1/8 x 2 sheets balsa print wood
6 3/64 x 2 sheets balsa print wood
1 1/8 x 2 x 15 sheet balsa
4 1/8 x 1/2 x 14 balsa strips
1 1/8 x 3/8 x 16 balsa strips
25 1/16 x 1/8 x 14" balsa strips
12 1/16 x 1/16 x 13" balsa strips
1 Balsa nose block
1 Shaft bobbin
1 3/16" dowell
1 1/8" wood screws
4 Large washers
2 Metal nose block fittings
2 Metal propeller fittings
2 Steel rear post fittings
1 Length 1/16" steel wire
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1 Propeller spring

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There is an interesting history surrounding this center of aviation training: It parallels the history of the air corps and illustrates how the first great World War started the need for pilots who are now playing such a big role in the teaching of new birdmen to fly in any war that may develop from the present European conflict.

In 1926 Major General Mason W. Patrick, then Chief of the Air Corps, Major Ralph Royce, Commandant at Brooks Field and Colonel C. C. Culverm, Commandant at Kelly Field, recommended that all primary flight training be concentrated at San Antonio, since the city was just midway between east and west coasts and its climatic conditions were ideal for flying the year-round. This they knew from past results obtained at Brooks and Kelly Fields, the former at one time being the primary training center.

Congress took its first action on the proposal by passing an appropriation bill to be used for housing the personnel of the new air field at San Antonio. The bill was junked in the Senate because some senators refused the appropriation until land was made available to the government. One year later the city of San Antonio, since to become known as the "Mother of Aviation" offered approximately 2300 acres to the U. S. government on which to build the field, with more than half a million dollars donated by the citizens of San Antonio to pay for its cost. The land deed from the state of Texas was officially presented to the air corps in 1928 and construction of the proposed training center got underway that year.

Shortly after construction had started the Chief of the Air Corps, at that time General James E. Fechet, suggested the new field be given the name of Randolph in memory of Captain William Randolph of the air corps who was killed at Gorman, Texas, while in active service at Kelly Field. His plane crashed shortly after a take-off when on a cross-country flight and the accident brought an end to the career of a "great soldier and a man who had devoted much of his time to the advancement of military flying both during the war and in peace time." He was a native of Austin, Texas.

The job of building Randolph Field was the toughest to face army engineers since construction of the Panama Canal. The site was nothing more than a great piece of farmland covered with cacti and other obstacles; it was no minor task to evacuate and dismantle the seventeen farm houses which were clustered about the many acres, and to level off ground which in many places was highly forested, but the army went about the job in a well-planned fast-moving manner.

When the land was made level construction of the two warehouses and six barracks began immediately. Several construction companies were under contract to the government to complete the project and within less than two years construction of the field was half-way completed.

At this time, June 20, 1930, the official dedication of Randolph Field was held before twelve thousand spectators. In the reviewing stands, constructed especially for the occasion, were high officials of the air corps and the War Department as well as many visiting foreign dignitaries. More than two hundred planes from various army fields circled overhead to take part in the celebration activities.

By the fall of 1931 most of the construction work was completed and the total cost was estimated at 11 million dollars. This money was spent by the government with the hope of building the greatest flying school in the world, thus encouraging young men of physical and mental fitness to take up military flying as a career and strengthen our nation's air power.

After ten weeks of basic training at Randolph Field the cadet journey's a few miles to Kelly Field, which is a contrasting sight after his association with the modernistic buildings and equipment at Randolph; Kelly stands just as it did during the war, when it was founded. The same tin-roofed barracks and hangars make up its buildings, but there is a certain atmosphere of tradition which fairly reeks from their walls. It is the dean of all flying schools and has watched the progress of the airplane from old Curtiss Jenny training ships, used during the World War, up to the modern Douglas bombers that roar across its tarmac. Could it talk, many a secret revelation surrounding the career of some of aviation's greatest figures might be brought to light, for a number of them have spent many hours within its classrooms and on the field trying out the same problems and experiencing the same thrills and difficulties which confront the cadet of today when he enters Kelly Field.

Here the student must put into practice all he has learned during the past eight months' training at Randolph. He no longer

spends his time trying to get the plane off the ground and back to earth again, but devotes it to learning what to do with his ship in the air. There are certain military tactics to which he must accustom himself. He flies in closer formation than ever before; goes on longer cross-country flights; does more night flying, all of which is a routine similar to that he would receive were he on active duty in one of the tactical units of Uncle Sam's air corps.

Nor is he finished entirely with ground school work. The progress of aviation is so rapid that many things he has already learned at Randolph Field have since become obsolete, or have been improved upon to such an extent that it is necessary for him to increase his knowledge about them. To keep the student well informed on both in military and commercial aviation, army officers from Wright Field in Dayton, where all experimental work for the air corps is carried on, come to Kelly and lecture on various phases of aeronautical advancement. In addition, officers from G.H.Q. of the air corps spend many hours informing the cadet of up-to-the-minute operations of the air corps units.

This is only part of his advanced ground work! He runs into phases of military aviation which he has never known before. Bomb racks, chemical tanks, new type guns and other fighting equipment are all strange to his untrained hands, but he is soon able to "catch on" to their operations. The same applies to many of the newer features in the planes themselves. He has controllable-pitch propellers, wing flaps, brakes, radio beams and other new developments to contend with and they take up a great deal of his time, for he must be well acquainted with each.

Primarily, however, Kelly Field is devoted to teaching the student tactical units of the air corps and training him to be part of the unit for which he seems best fitted, or in some cases, for that unit which has greatest need for new personnel. The student is trained to fly all different type planes used by the army today, in case he should be shifted from one unit to another after he is pressed into active duty. There are four of these tactical units—bombardment, pursuit, attack and observation—which make up the U. S. Army Air Corps.

When the cadet enters Kelly Field he is assigned to one of these groups and specializes in its study throughout his training until graduation, when he is assigned to active duty in a particular air corps squadron.

The bombardment section is the greatest offensive weapon of the air force. A student taking his training learns to fly Keystone bombers which are no longer manufactured but serve as excellent training planes. After he has mastered control of these ships he takes aloft newer type bombers—Douglas B-18's—and thus is prepared to fly the giant "Flying Fortresses" which are such a formidable part of Uncle Sam's air corps equipment. He gets more formation and night flying in this unit than he would in any other, since bombing planes rely upon their close formation as protection against enemy ships and raids are much more effective under cover of night. Many students choose this training because it offers them the opportunity to

acquaint themselves with larger planes similar to those used on commercial airlines, and according to the record number of Kelly graduates who today pilot commercial planes across the country, the bombardment unit of the air corps will never be very short on pilots.

One of the most interesting phases of students' training for the bombardment section is bomb practice in the bombing tower. This is a large circular tower rising approximately two hundred feet in the air and from platforms near its peak students look down on a "dummy earth" which spins slowly below and appears just like the ground does when in actual flight. They are also supplied with practice bomb mechanisms and by accurate timing and computations they drop imaginary bombs (in this case electrical contacts which flash like real explosions on the earth below). Thus the students' accuracy can easily be determined and faults be corrected.

The pursuit section is second in popularity and most of its recruits come from the group of pilots who has taken up aviation purely for love of flying itself. They are trained in Boeing Pt-12's and their range of schooling includes special missions against ground objectives and interception problems which require a great amount of cross-country flying. The ships which the student in pursuit aviation must master are the fastest on earth and are the the most sensitive type of airplane in existence. For this reason, however, they might be termed the safest, because greater strength is embodied in their structural design to meet the strain of acrobatic flying which is necessary to pursuit work. For this so-called "stunt" flying the cadet takes his ship aloft and executes every known type of aerial maneuver.

"Sometimes he does one that isn't so well known," laughed one of the officers who was out front of operations critically eyeing three of the "Chaser" planes as they came in for a landing. "In fact it happens quite often and in most cases the kid just 'gives her the gun' and smiles with pride at having done something that has never before been accomplished. Then he tries the rest of his life to duplicate the maneuver without success."

On down the "line" a cadet offered an explanation which rather pleased the writer. "It's no wonder we get tangled up once in a while, you'd go too, if you have five hundred horses strapped to the seat of your pants. And these babies are a lot faster than horses could ever be; if you don't believe it try one of them."

All of which is a new way of saying that these pursuit ships of Uncle Sam's, even those used for training, are no slouches when it comes to kickin' up air.

Since its effectiveness in the Italian-Ethiopian conflict, attack aviation has become one of the "pet" divisions of the G.H.Q. air force. Its scope has been increased greatly since its first adaption during the war, when it was used against any concentration of men or materials the destruction of which might prove an important factor to victory. The student's training in attack operations is similar to that in the bombardment group, in the respect that he works with another student while in the air. Students in bombardment work in groups. The reason for this in both cases is operations of attack ships and bombers require more than one man.

Most training in the attack is based on flight problems similar to regular war maneuvers. These originate in hangar classrooms before actual flying starts, usually about seven or eight in the morning. Here the cadet gets orders from an instructor or officer in charge; he is told to fly at a certain altitude and meet one of his flight leaders at a specified point and time. In addition to this information he is given the weather report and information concerning wind speed and direction. Thus by mathematical computation—which he learned at Randolph—he determines the speed he must fly in order to reach the slated destination within the alloted time. This is known as a "flight problem" and in this particular case represents a lesson in interception. The student is given many of these problems during his course at Kelly.

Last of all comes the reconnaissance group. This is probably the first form of military aeronautics and is a vitally important one, since it serves as the "eyes of the army." The observation pilot must observe the enemy's position and report various movements to his ground base so the information can be relayed to the army in the field. He must also be acquainted with aerial photography for this is an important part of his duty.

The student in this section is confronted with technical problems which make his studying very difficult. He must have an unusual understanding of both army and

navy military maneuvers as they are conducted on ground and sea; he must know his maps and ground formation and in addition must be an expert gunner and flyer, for most of his flying is done alone and he must be his own protector. He is taught all this, and more too, during his training as an observation pilot.

This covers the student's training with individual tactical units. There are other problems, however, that are part of his training at Kelly. Most serious of this is his schooling in cross-country flying and night flying; he spends approximately 150 hours in the air on these flights. The location of the field and surrounding country are ideal for this training and the student has good opportunity to try out his own navigation methods when he is sent out on a long cross-country trip. Flights like this occur two or three times a week and the student takes off at early dawn and sometimes does not return until sunset.

This training is climaxed by a four-day maintenance flight during which the cadet must service his own plane and take care of all his special equipment. This flight covers the entire rim of Texas, or approximately 2,000 miles, and when it is completed the student can look forward to that moment when he receives his long-sought-after silver wings, for it is near at hand.

Graduation for the flying cadet is the most memorable experience of his life, for it marks the attainment of a long and hard-worked-for goal. He has risked his life for this moment. The exercises are also a memorable sight to the outsider who may travel a long way to see the cadets on graduation day. Like the cadets at West Point and Annapolis, the fledglings of Uncle Sam who are about to become a definite part of the air corps put on a show that can never be forgotten.

Ships from the various sections fly in formation over the reviewing stands. It is hard to believe that only a year ago these men were untrained in the art of flying and it seems nothing short of a miracle to see them "pass in review" with faultless ability before their commanding officers and friends.

Then, when the ships settle to earth once more and cadets line up before their superior officers, they hear words of praise from air corps officials and are impressed once again with the duty which is invested upon them. No one realizes more than the individual who has undergone this strenuous training and rigid discipline for the past year the true feeling that is in his heart! He has seen himself transformed from a civilian into an army officer, from a youngster who was scared of a joy-stick to a pilot who is lost without its touch.

Perhaps, too, just before he receives his wings he thinks of those students who have given their lives trying to master the training he has just completed; there may come to mind an understanding poem which hangs in the office of his commanding officer.

He may even repeat to himself its words as a silent tribute to those "buddies" who died . . .

When the last long flight is over
And the happy landings past,
And my altimeter tells me
That the crack-up's come at last,
I'll point her nose to the ceiling
And I'll give my crate the gun
I'll open her up and let her zoom
For the airport of the sun.
Then, the great God of flying men
Will look at me sort o' slow
As I stow my plane in the hangar
On the field where flyers go.
Then, I'll look upon His face
The Almighty Flying Boss,
Whose wingspread fills the horizon
From Orion to Cross.

As his name is called he stands before his commanding officer as a Flying Cadet for the last time. Nine months ago he entered the army to learn how to fly. In that time he has learned far more than how to control an airplane; he has learned the importance of self-control and how to exercise it; he knows the meaning of the words "discipline" and "tradition" as only his select few can understand them. To him Old Glory unfurls her significant symbolisms of courage, purity and integrity into a bond of eternal friendship and love—friendship for his comrades of the air and love for the country he has sworn to defend.

He is an officer in the U. S. Air Corps. UNCLE SAM HAS GIVEN HIM WINGS!

Model Designing Simplified

(Continued from page 9)

Now, while the wing is drying, you may undertake the most difficult task of all—i.e., making the propeller.

This is a problem which most beginners dread. Actually, it is a simple task if the builder will undertake it with precision and

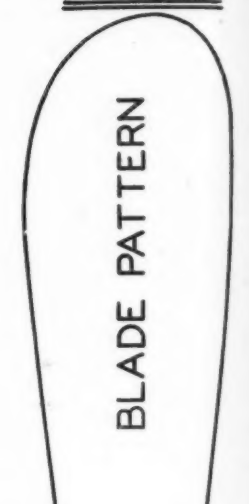
care. The first step is to obtain a hard balsa block 8" long, 1-1/2" wide and 3/4" deep. Such a block is shown in Figure 3. Sand all surfaces lightly with fine sandpaper. Then draw diagonal lines from the corners of the block on each side face as shown in Figure 3. Where these lines cross, drill a hole 1/32" in diameter and push a long pin through the wood exactly perpendicular to the face of the block. This will be the shaft hole passing through the propeller hub. Now draw in a hub around this hole as shown in the figure. Step number two is to cut out the propeller blank shown in Figure 4 from the block in Figure 3. You will note that now you have two wedge-shaped pieces extending outward from a central oval hub. You may saw out this blank on a jig-saw, a hand-saw or with a penknife. When cutting out the blank use care to cut with the grain and never against it. That is, cut from the ends of the block toward the center. You will note that the sides of the blank after they have been cut are exactly perpendicular. To make this so is the most difficult task. When performing this operation with a penknife, great care should be taken with each cut of the knife when approaching the diagonal guide lines in the process of carving. Now you proceed to carve the blade of the propeller.

The concave side is formed first. The blade when finished will be a surface from edge M to edge N, Figure 4, edge E prime being cut away. Both ends of the blade should be carved in the same manner and when finished the two blades will appear as in Figure 5. Start the cutting at the tip of the propeller, cutting from the hub toward the tip. Do not cut away too large a piece of the wood at one time for this may result in the chipping off of a large piece of the block that is to form the blade. When the face of the propeller, passing from M to N, has been carved so that it is fairly flat, smooth it down with coarse sandpaper, hollowing it out so that it is slightly concave. The finishing touches may be given to each hollow face with fine sandpaper. When this is done, the backs or convex surfaces of the blade should be formed. To do this, cut away edges T of each blade, Figure 5.

As with the concave faces, start at the tips and work toward the hub, cutting away small pieces of the wood at a time until the blade is the proper thickness at each point along its length. Near the hub it should be twice as thick as at the tips in order to provide the proper strength. Always stop cutting before you think you are finished, otherwise more of the blade may be cut away than desired. After the blade has been formed by the carving process, use coarse sandpaper to take away any excess wood. Ridges and bumps are thus smoothed out. The final smooth finish may be given to the blade by using fine sandpaper. When both surfaces of the blades have been cut, the propeller should appear as in Figure 6. Here you have a propeller with square corners; in order to make it more efficient these corners should be rounded.

To do this, place the pattern, Figure 6a, on the concave face of the blade shown by the dotted line in Figure 6, trace around this pattern and then cut away the corners up to the line. When one blade is finished, the propeller will appear as in Figure 7. After rounding both blade tips, smooth down the curved edges of the blade by sanding away the convex side. Fine sandpaper should be used so that too much wood will not be pulled away and the edges made ragged. The finished propeller will appear as in Figure 8.

FIG. 6A



However, one last step remains. That is, the propeller must be balanced. Insert a pin through a hole at the center of the hub, suspend it by the pin so that the propeller may turn freely. If one blade drops, it is too heavy and a small amount of wood should be sanded from the convex side at the tip. When this is done, suspend the propeller freely again. Repeat this until the propeller remains motionless when suspended, indicating that both blades are the same weight and in balance.

The next step is to insert the shaft of the propeller. The former is shown in the drawing given in Article No. 4. Force the straight end of the shaft through the hole at the center of the hub from the concave, or rear, side, until about 1" of the straight end protrudes from the front of the hub. Then bend over the tip of the shaft as shown in Figure 9 by gripping it with the pliers at a point 3/8" from the tip. When the U has been bent, pull the shaft back through the hub, pressing the bent-over end into the wood of the hub.

By this time, the center joint of the wing should be thoroughly dry. The two center ribs now should be shaped so that the

elevation block may be glued in place. The two outside faces of the auxiliary ribs, glued to the sides of the center ribs, must be beveled. The part to be taken away is shown shaded in Figure 10. This may be taken away with a penknife until the distance across the two center ribs is exactly 1/4"; the same width as the motor stick. Also the bottom of the two center ribs at A should be flattened.

It was described in Article No. 4 how the elevation block was made. This block should now fit up against and around the two center ribs of the wing; or in other words, the two center ribs should fit down between the center block sides so that they rest flush upon the elevation blocks; the latter having been cemented between the two sides. A perspective view of this is shown in the plans in Article No. 3. When the two center ribs have been shaved down so that they fit snugly into the elevation block they should be covered with cement and the two parts pressed snugly together. Figure 10 indicates how the block is pushed up into place.

The tail skid, shown in the parts-drawing Article 4, should be inserted over the rear end of the stick with its long end extending downward. The long horizontal side of the U will extend forward under the stick. Before cementing it in place, fit it to the stick, bending the wire as required to make a rigid attachment. Then cover the wire and end of the stick with cement.

Next, proceed to attach the tail surfaces to the rear end of the stick. The stabilizer is cemented to the stick's upper side with its trailing edge about 1/8" from the rear of the stick. In order to have the stabilizer centered upon the stick, draw a line perpendicular to the leading and trailing edges at the exact center. This line should be directly over the stick. Then the fin may be cemented in place to the top of the stabilizer directly over the center line, with its lower edge cemented tightly to its upper surface. Hold it in place vertically with pins stuck in from both sides of the fin. The stabilizer may be held in place in the same manner.

Attach the landing gear to the stick about 1-1/4" from its front end, slipping the U of the landing gear down over the stick so that it fits tightly as shown in the drawing Article No. 3. Cement it in place. If it is too loose, pinch together the sides of the U so that it hugs the stick tightly yet does not crush and thereby weaken it. Wheels are put on over the horizontal axle end of each axle which should be bent up on the outside with the pliers so that the wheels will not come off. If you wish to give the landing gear greater rigidity, wrap two or three loops of thread around the two ends of the U directly under the stick, then tie it firmly and cover the thread with cement.

Next attach the bearing to the underside of the stick, allowing the L end to extend downward and about 1/16" forward of the stick's front end. Bind this in place with thread after covering the stick and bearing with cement as shown in Figure 5, Article No. 4. Tie the thread and smear cement over it to make a tight joint.

All that remains now is to pass a washer over the loop of the propeller shaft and to hook the shaft through the hole in the bearing, pushing it back into place.

Of course, a motor must be added. Tie a

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loop about 1" long in one end of a length of 1/8" flat rubber. Hook this loop over the propeller shaft, draw the rubber rearward without stretching it, loop it around the tail skid, then forward, looping it through the propeller hook. Proceed in this manner until five strands are in place. This will bring you to the tail skid. Break the rubber and tie another 1" loop in the end. Hook it around the skid. If you desire to use an "S" hook (shown in the parts-drawing Article No. 4) at the rear so that the motor may be wound with a winder, pass the small eye of the "S" hook over the tail skid and loop the rubber through the large eye instead of around the skids, as shown in the side-view drawing, Article No. 3. When finished the motor should have a very slight sag and should not be tight, though a little tighter than shown in the side-view, Article No. 3. The sag indicated in the drawing is the amount that it will have after the motor has been wound and stretched once or twice.

Now your plane is complete except for fitting the wings and elevation block over the motor stick. The two sides of the block should fit down on either side of the stick; the center of the wing being about 6-1/2" from the front end of the stick. To hold it in place wrap two loops around the protruding ends of the elevation block and stick, fore and aft of the wing. Tie the ends of the loops on the top of the stick and clip them so that they will not hang down and foul the motor. This is the wing's approximate flying position. To determine this accurately balance the plane on your forefinger, directly under the center of the wing. If it balances in a horizontal position, the plane is ready for flight. If the nose drops, move the plane forward along the stick until balance is attained; if the tail drops, move it backward.

Flying

Making your first flight with your first model is a real thrill for any model fan, but do not let your enthusiasm overcome your good judgment. First glide your plane, toss it gently forward with the nose slightly down. When you are sure that you have launched it correctly, note the flight of your plane. If it glides smoothly to a landing you are ready for a flight. If the nose rises and then drops suddenly, the wing is too far forward; therefore, move it to the rear approximately 1/4" and test it again. Continue this until the glide is smooth. On the other hand, if the nose does not rise but drops suddenly and the plane comes to earth prematurely, the wing should be moved forward. When the glide is perfect, wind the motor about 25 to 35 turns and launch the ship horizontally, tossing it forward and releasing the propeller at the same time. The most convenient way to launch it is to hold the plane with the right hand directly under the wing, restraining the propeller with the left.

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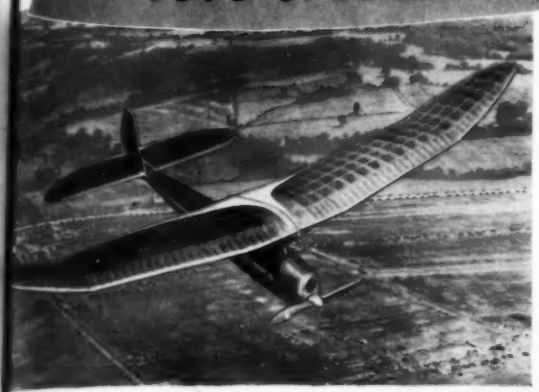

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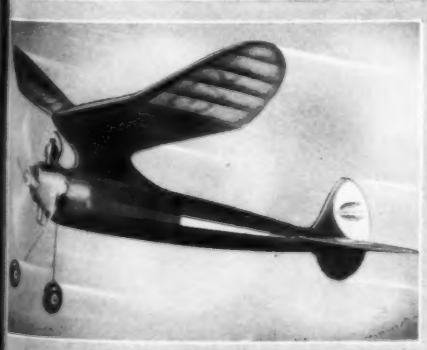

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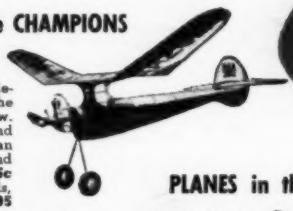

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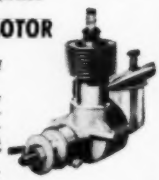

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